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1. PURPOSE

THE EXTENDED CORE FUNCTION TEST PROVIDES TWO SPECIAL PATTERN TESTS FOR DIAGNOSING INTERMITTENT CORE PROBLEMS. IT SHOULD BE USED IF THE CORE FUNCTION TEST, 8CF, FAILS TO PINPOINT A PERSISTANT INTERMITTENT PROBLEM.

2. REQUIREMENTS

2.1 PROGRAM

THE 1800 RELOCATABLE DIAGNOSTIC LOADER IS USED TO LOAD THE OBJECT DECK OR PAPER TAPE OBJECT PROGRAM.

2.2 EQUIPMENT

AN 1800 PROCESSOR-CONTROLLER WITH 8 - 65K OF MEMORY. (1801, 1802, 1803)

A 1442 CARD READ PUNCH OR 1054 PAPER TAPE READER.

A 1443 OR 1816 OR 1053 PRINTER FOR DIAGNOSTIC MESSAGES.

3. OPERATING PROCEDURE

3.1 PROGRAM LOADING

THE EXTENDED CORE FUNCTION TEST CAN BE LOADED AND EXECUTED ON ANY 4K WORD BOUNDARY. NORMALLY THE PROGRAM IS INITIALLY LOADED AND EXECUTED IN THE HI 4K OF THE FIRST BSM, HOWEVER, IF THE FIRST BSM IS SUSPECT, IT IS POSSIBLE TO LOAD THE EXTENDED CORE FUNCTION TEST IN THE HI 4K OF ANY BSM BY PATCHING THE RELOCATABLE LOADER.

IF THE OBJECT PROGRAM IS ON CARDS, THE NINTH CARD OF THE LOADER SHOULD BE REPLACED WITH ONE OF THE FOLLOWING CARDS TO ACCOMPLISH RELOCATION -

BSM	ADDRESS RANGE OF BSM	PATCH CARD COLS. 1-10
1	/0000-/1FFF	&0125 17FF
2	/2000-/3FFF	&0125 37FF
3	/4000-/5FFF	&0125 57FF
4	/6000-/7FFF	&0125 77FF
5	/8000-/9FFF	&0125 97FF
6	/A000-/BFFF	&0125 B7FF
7	/C000-/DFFF	&0125 D7FF
8	/E000-/FFFF	&0125 F7FF

```
*****************************************************************
*                                                               *
*       IMPORTANT OPERATING INSTRUCTION                         *
*                                                               *
*****************************************************************
*                                                               *
*       THE 8 PATCH CARDS SHOWN ABOVE ARE SENT TO THE FIELD     *
*       IN FRONT OF THE OBJECT DECK.  THE FIELD ENGINEER        *
*       SHOULD SELECT ONE FOR USE AND REMOVE AND SAVE THE       *
*       OTHER SEVEN DURING OPERATION.  THE SELECTED PATCH       *
*       CARD SHOULD REMAIN BEFORE THE OBJECT DECK AND THE       *
*       LOADER PLACED IN FRONT OF IT.                           *
*                                                               *
*       **NOTE - THE PATCH CARDS AFFECT THE LOADER.  THEY       *
*       ARE NOT SHOWN IN THE OBJECT DECK LISTING.               *
*                                                               *
*****************************************************************
```

IF THE OBJECT PROGRAM IS ON PAPER TAPE, THE RELOCATABLE PAPER TAPE LOADER (PROGRAM 0880) WILL HAVE TO BE PATCHED AFTER IT HAS BEEN LOADED.

OF COURSE, IF THE 1800 HAS ONLY ONE BSM, THE OPERATOR WILL HAVE TO ATTEMPT TO LOAD THE CORE FUNCTION TEST IN THE NORMAL MANNER OR ATTEMPT TO TROUBLESHOOT THE MEMORY WITH SOME OTHER METHOD.

TO LOAD THE EXTENDED CORE FUNCTION TEST OBJECT DECK OR PAPER TAPE OBJECT PROGRAM -

1. CLEAR THE MEMORY, RESET THE MACHINE.

2. A) CARD - PLACE OBJECT DECK IN CARD READER, PRESS READER START BUTTON.

   B) PAPER TAPE - PUT PAPER TAPE LOADER PROGRAM, 08B0, IN THE PAPER TAPE READER AND LOAD THE PROGRAM. WHEN IT COMES TO WAIT /30FF AND THE IAR IS AT /0083, PATCH WORD /0125 USING THE DATA ENTRY SWITCHES -

BSM	ADDRESS RANGE OF BSM	HEX PATCH IN WORD /0125
1	/0000-/1FFF	/17FF
2	/2000-/3FFF	/37FF
3	/4000-/5FFF	/57FF
4	/6000-/7FFF	/77FF
5	/8000-/9FFF	/97FF
6	/A000-/BFFF	/B7FF
7	/C000-/DFFF	/D7FF
8	/E000-/FFFF	/F7FF

   WHEN THE PATCH IS COMPLETED, RETURN TO WAIT /30FF AT LOCATION /0082. PUT THE OBJECT PROGRAM TAPE INTO THE PAPER TAPE READER AND READY IT.

3. SET DATA ENTRY SWITCH 9 TO INDICATE PRINTER FOR MESSAGE LOGGING.

   SWITCH 9 OFF, LOG ON 1443.

   SWITCH 9 ON, LOG ON 1816 OR 1053.

   READY INDICATED PRINTER.

4. A) CARD - PRESS THE PROGRAM LOAD BUTTON. THE PROGRAM WILL BE LOADED, A HEADING PRINTED AND THE PROGRAM WILL WAIT FOR THE DATA ENTRY SWITCH SETTINGS.

   B) PAPER TAPE - PRESS THE START BUTTON AND THE PROGRAM WILL BE LOADED, A HEADING PRINTED AND THE PROGRAM WILL WAIT FOR DATA ENTRY SWITCH SETTINGS.

****
*
* IMPORTANT OPERATING INSTRUCTION
*
****
*
* 5. SET WRITE STORAGE PROTECT BITS SWITCH TO YES.
*   SET CHECK STOP SWITCH TO OFF.
*
****

THE EXTENDED CORE FUNCTION TEST IS LOADED AND READY TO RUN.

3.2 PROGRAM OPERATION

THE EXTENDED CORE FUNCTION TEST CONSISTS OF TWO PATTERN TESTS. THEY CAN BOTH BE RUN OR ONE CAN BE SELECTED. THE TEST CAN BE RUN IN ALL BASIC STORAGE MODULES OF A MACHINE OR IT CAN BE RUN IN A SELECTED BASIC STORAGE MODULE. IT IS ALSO POSSIBLE FOR THE EXTENDED CORE FUNCTION TEST TO BE RESIDING IN ONE BASIC STORAGE MODULE AND RUNNING PATTERN TESTS IN ANOTHER BASIC STORAGE MODULE (EXTERNAL TEST). THERE IS A PROVISION FOR LOOPING ON A PATTERN TEST.

PATTERN TEST SELECTION IS MADE BY SETTING DATA ENTRY SWITCHES 0 - 3. SETTINGS ARE INDICATED BELOW -

DATA ENTRY SWITCHES 0123	PATTERN TEST SELECTED
0000	BOTH PATTERN TESTS ARE TO BE EXECUTED.
0001	1 - CORE BEAT TEST
0010	2 - RANDOM DATA, MIXED OPERATIONS TEST
1111	15 - SUMMARY LOG

* NOTE - ALL SWITCH SETTINGS FOR DES. 0-3 BETWEEN 0010 AND 1111 ARE INVALID AND IF SELECTED WILL RESULT IN AN ERROR LOG.

STORAGE MODULE SELECTION IS INDICATED BY DATA ENTRY SWITCHES 4 - 7. SETTINGS ARE INDICATED BELOW -

DATA ENTRY SWITCHES 4567	BSM SELECTED FOR TESTING	ADDRESS RANGE OF BSM
0000	ALL	
0001	1	/0000-/1FFF
0010	2	/2000-/3FFF
0011	3	/4000-/5FFF
0100	4	/6000-/7FFF
0101	5	/8000-/9FFF
0110	6	/A000-/BFFF
0111	7	/C000-/DFFF
1000	8	/E000-/FFFF

* NOTE - ALL OTHER SWITCH SETTINGS FOR DES. 4-7 ARE INVALID AND IF SELECTED WILL RESULT IN AN ERROR LOG. ALSO, SELECTING A BSM NOT IN THE RANGE OF THE PARTICULAR MACHINE WILL RESULT IN AN ERROR LOG.

DATA ENTRY SWITCH 8 DETERMINES WHEATHER THE BSM SELECTED BY DES. 4-7 WILL BE EXERCISED INTERNALLY OR EXTERNALLY.

BELOW ARE THE FUNCTIONS OF DATA ENTRY SWITCHES 8 - 15.

DES		FUNCTION
8	(OFF)	THE BSM SELECTED BY DES. 4-7 IS TO BE EXERCISED INTERNALLY.
	(ON)	THE BSM SELECTED BY DES. 4-7 IS TO BE EXERCISED EXTERNALLY.
9	(OFF)	LOG ON 1443.
	(ON)	LOG ON 1816 OR 1053.
10	(ON)	LOOP ON PATTERN TEST.
11		THERE IS NO LOOP ON PROGRAM OPTION.
13	(ON)	BYPASS IMMEDIATE ERROR LOG.
14	(ON)	WAIT ON ERROR.
15	(ON)	WAIT BEFORE STARTING PATTERN TEST.

WHEN THE DATA ENTRY SWITCHES HAVE BEEN SET, PRESS THE START BUTTON AND THE EXTENDED CORE FUNCTION TEST WILL BE EXECUTED. WHEN ERRORS ARE DETECTED, AN IMMEDIATE ERROR LOG IS PRINTED, UNLESS DES. 13 IS ON. (SEE SECTION 4.2 FOR DESCRIPTION OF ERROR LOGS.) WHEN THE CORE FUNCTION TEST IS COMPLETE, THE SUMMARY LOG WILL BE PRINTED. IT CANNOT BE BYPASSED. (SEE SECTION 4.3 FOR A DESCRIPTION OF THE SUMMARY LOG.)

```
*************************************************************************
*                                                                       *
*       IMPORTANT OPERATING NOTE                                        *
*                                                                       *
*************************************************************************
*                                                                       *
*       AT ANY TIME THE OPERATOR MAY RETURN TO THE BEGINNING OF         *
*       THE PROGRAM BY PRESSING THE IMMEDIATE STOP AND START            *
*       BUTTONS.  DATA ON ERRORS, FOR THE SUMMARY LOG, IS NOT LOST.     *
*                                                                       *
*       CAUTION - STOPPING AND RESETTING THE MACHINE DURING PATTERN     *
*       TEST 1 CAN LEAVE STORAGE PROTECT BITS SET IN MEMORY AND IT      *
*       WILL BE IMPOSSIBLE TO RUN OTHER PATTERN TESTS.                  *
*                                                                       *
*************************************************************************
```

3.3 WAITS

ALL WAITS ARE DESCRIBED IN THE WAIT SECTION AT THE BEGINNING OF THE PROGRAM.

3.4 TERMINATIONS

CERTAIN CONDITIONS CAN CAUSE THE ABNORMAL TERMINATION OF THE EXTENDED CORE FUNCTION TEST. THESE TERMINATIONS ARE SPECIAL WAITS WITHOUT LOGS. SEE THE WAIT SECTION AT THE BEGINNING OF THE PROGRAM.

4. PRINTOUTS

4.1 STATUS MESSAGES

ALL STATUS AND ERROR MESSAGES ARE PRECEEDED BY A FOUR DIGIT DECIMAL CODE. THE FIST TWO DIGITS INDICATE THE ROUTINE THAT CAUSED THE MESSAGE. THE LAST TWO DIGITS ARE THE MESSAGE CODE.

ROUTINE IDENTIFICATIONS ARE LISTED BELOW -

CODE	ROUTINE
00	INITIALIZATION AND HOUSEKEEPING
01	CORE BEAT TEST
02	RANDOM DATA, MIXED OPERATIONS TEST
15	SUMMARY LOG

MESSAGE CODES ARE GROUPED INTO GENERAL AREAS -

00 - 09	GENERAL MESSAGES
10 - 19	DATA ENTRY SWITCH SETTING ERRORS
20 - 29	TEST PATTERN ERRORS
30 - 39	ERRORS DETECTED BY INTERNAL INTERRUPT

BELOW IS A LIST OF GENERAL MESSAGES AND DATA ENTRY SWITCH ERROR LOGS WITH ACTION REQUIRED -

MESSAGE		ACTION
0000	08CF CORE TEST	HEADING, NO ACTION REQUIRED.
0001	SET DES	SET DATA ENTRY SWITCHES FOR PROGRAM OPTIONS. PRESS START TO EXECUTE CORE FUNCTION TEST.
0010	DES 8	SWITCH 8 IS ON INDICATING AN EXTERNAL TEST, BUT NO BSM HAS BEEN IDENTIFIED BY DES. 4-7. EITHER RESET SWITCH 8, OR SET DES. 4-7 TO A VALID COMBINATION AND PRESS START TO RE-INITIALIZE.
0011	DES 4-7	A BSM HAS BEEN SPECIFIED BY DES. 4-7 WHICH IS OUT OF RANGE FOR THIS MACHINE. RESET DES. 4-7 TO A VALID COMBINATION AND PRESS START TO RE-INITIALIZE.
0012	ONE BSM	THIS 1800 HAS ONLY ONE BSM. IT IS NOT POSSIBLE TO RUN AN EXTERNAL TEST ON AN 8K MACHINE. RESET DES. 8 AND PRESS START TO RE-INITIALIZE.
0014	DES 0-3	AN INVALID PATTERN TEST HAS BEEN SPECIFIED BY DES. 0-3. RESET THE SWITCHES TO A VALID COMBINATION AND PRESS START TO RE-INITIALIZE.
0101	TEST PATTERN-DES. 0-15. STOR. PROT. BIT-SENSE SW. 0.	THE CORE BEAT TEST HAS BEEN ENTERED. THE OPERATOR MUST SUPPLY THE PATTERN THAT EACH CORE POSITION IS TO BE EXERCISED WITH. THE BIT PATTERN SHOULD BE SET IN DATA ENTRY SWITCHES 0-15. IF THE STORAGE PROTECT BIT IS TO BE INCLUDED IN THE TEST PATTERN, INDICATE IT BY SETTING SENSE SWITCH 0. PRESS START AND THE SWITCHES WILL BE READ AND THE PROGRAM WILL CONTINUE.

0102	ENTER START ADDR.-DES 0-15.	IF THE STORAGE MODULE TO TEST IS EXPLICITLY DEFINED OR IS TO BE EXTERNALLY TESTED, THE PROGRAM WILL ASK FOR THE STARTING ADDRESS LIMIT. ENTER THE ADDRESS IN DATA ENTRY SWITCHES 0-15. PRESS START AND THE SWITCHES WILL BE READ AND THE PROGRAM WILL CONTINUE. **NOTE - STORAGE LOCATIONS 0-9 ARE NOT ACCEPTED AS STARTING ADDRESSES SINCE THEY ARE RESTART AND INTERRUPT TRANSFER VECTORS. THE LOWEST VALID STARTING ADDRESS IS /000A.
0103	ENTER END ADDR.-DES 0-15.	IF THE STORAGE MODULE TO TEST IS EXPLICITLY DEFINED OR IS TO BE EXTERNALLY TESTED, THE PROGRAM WILL ASK FOR THE END ADDRESS LIMIT. ENTER THE ADDRESS IN DATA ENTRY SWITCHES 0-15. PRESS START AND THE SWITCHES WILL BE READ AND THE PROGRAM WILL CONTINUE.
0104	RESTORE DES 0-15.	RESTORE DES. 0-15 TO THE PREVIOUS SETTING INDICATING BSM, TEST AND PROGRAM OPTIONS. PRESS START TO EXECUTE THE CORE BEAT TEST.

```
*****************************************************************
*                                                               *
*       IMPORTANT OPERATING NOTE                                *
*                                                               *
*****************************************************************
*                                                               *
*       THE DATA ENTRY SWITCHES MUST BE RESET TO THE            *
*       PREVIOUS PROGRAM OPTION SETTING FOR THE CORE BEAT       *
*       TEST TO WORK CORRECTLY.                                 *
*                                                               *
*****************************************************************
```

0115	DES ERROR.	THE ADDRESS ENTERED IN DES 0-15 FOR THE CORE BEAT TEST IS INVALID. RESET THE SWITCHES TO A VALID ADDRESS AND PRESS START TO CONTINUE.
0X00	WAIT	X IS THE ROUTINE IDENTIFICATION. THIS IS THE PREPROCESSING WAIT, DATA ENTRY SWITCH 15 IS ON.
0X08	PASS COMPLETE	X IS THE ROUTINE IDENTIFICATION. THE LOOP ON ROUTINE SWITCH, DES. 10, IS ON. A PASS OF THE PATTERN TEST HAS BEEN EXECUTED.
1509	END CORE TEST	HEADING, NO ACTION REQUIRED.

* NOTE - THESE MESSAGES CANNOT BE BYPASSED BY SETTING DATA ENTRY SWITCH 14.

4.2 ERROR LOGS

THE IMMEDIATE ERROR LOG IS A ONE LINE MESSAGE THAT HAS AN ERROR CODE TO IDENTIFY THE TYPE OF ERROR, AND THE BINARY CODING OF THE ERROR ADDRESS, TEST PATTERN AND FAILURE PATTERN.

```
CODE        ADDRESS              TEST PATTERN   SP      FAIL. PATTERN   SP

XXYY  AAA BBB CCC DDD EEEE   TTTT TTTT TTTT TTTT TT  FFFF FFFF FFFF FFFF FF
```

WHERE -

XX - TEST ROUTINE ID., 00 - 02.
YY - MESSAGE ID., 00 - 99.

AAA - BSM NUMBER
BBB - HI X BIT PATTERN
CCC - LO X BIT PATTERN
DDD - HI Y BIT PATTERN
EEEE - LO Y BIT PATTERN

TTTT - TEST PATTERN
FFFF - FAILURE PATTERN
SP - STORAGE PROTECT BIT, PARITY BIT

MESSAGE IDENTIFICATION CODES ARE LISTED BELOW -

21 - BIT PATTERN ERROR DETECTED BY PATTERN TEST.

31 - OP CODE CHECK.

32 - PARITY CHECK IN PATTERN.

33 - PARITY CHECK IN CORE FUNCTION TEST PROGRAM.

34 - TWO OR MORE PARITY CHECKS.

35 - TWO OR MORE PARITY CHECKS, IN CORE FUNCTION TEST PROGRAM.

36 - INVALID STORAGE PROTECT CHECK.

37 - FALSE CAR CHECK.

38 - FALSE INTERRUPT.

39 - AUX CORE ERROR INTERRUPT.

* NOTE -

ERROR 31 - DOES NOT PRINT A TEST PATTERN OR FAILURE PATTERN IN THE ERROR LOG.
ERROR 33 - THE TEST PATTERN IS UNKNOWN, FOUR ASTERISKS (****) ARE PRINTED INSTEAD.
ERROR 35 - THE TEST PATTERN IS UNKNOWN, FOUR ASTERISKS (****) ARE PRINTED INSTEAD.

ERROR 36 -
ERROR 37 -
ERROR 38 - ARE ENGLISH LANGUAGE ERROR LOGS.

4.3 SUMMARY LOG

WHEN THE EXTENDED CORE FUNCTION TEST HAS COMPLETED ALL DESIGNATED TEST EXERCISES, IT WRITES A SUMMARY LOG. ALSO BY SETTING DES. 0-3 ON AT INITIALIZATION AND PRESSING START, THE SUMMARY LOG WILL BE PRINTED.

A SUMMARY LOG IS WRITTEN FOR EACH BASIC STORAGE MODULE THAT WAS EXERCISED. IF NO ERRORS WERE DETECTED, ONLY THE FAILURE BY PATTERN TEST SUMMARY IS LOGGED SO THE OPERATOR WILL KNOW HOW MANY LOOPS WERE MADE ON AN EXERCISE.

SUMMARY FOR BSM X (X IS THE BSM NUMBER, 1 - 8.)

BIT FAILURES

BIT	DROP	PICK
0	-----	-----
1	-----	56
2	9	-----
3	-----	153
4	68	-----
5	-----	-----
6	-----	-----
7	508	432
8	12	-----
9	-----	-----
10	-----	1
11	-----	-----
12	-----	-----
13	-----	3
14	-----	-----
15	-----	-----
S	-----	-----
P	-----	108

(S INDICATES THE STORAGE PROTECT BIT, P INDICATES THE PARITY BIT. THE VALUES INDICATED ARE ONLY FOR ILLUSTRATION.)

FAIL. BY ADDR. LINE

	HI X	LO X	HI Y	LO Y
000	-	-	-	-
001	1	-	-	-
010	-	2	-	-
011	-	1	-	-
100	-	4	-	-
101	-	-	2	-
110	-	-	-	-
111	5	-	-	-
1000	*	*	*	-
1001	*	*	*	9
1010	*	*	*	-
1011	*	*	*	-
1100	*	*	*	-
1101	*	*	*	-
1110	*	*	*	-
1111	*	*	*	-

SCALE FACTOR = 5

(EACH ENTRY IN THE TABLE IS SCALED IN THE RANGE 1-9, TO MAKE THE TABLE CONCISE AND EASY TO INTERPRET. A (-) INDICATES THAT NO FAILURES OCCURRED FOR THAT LINE. THE ASTERISK DENOTES THAT THERE ARE NO X OR Y ADDRESS LINES WITH THAT CORRESPONDING VALUE.

THE SCALE FACTOR IS THE DIVISOR USED TO REDUCE THE NUMBER OF ERRORS FOR EACH LINE TO A SINGLE VALUE IN THE RANGE OF 1-9. BY MULTIPLYING EACH ENTRY IN THE TABLE BY THE SCALE FACTOR, A CLOSE APPROXIMATION OF THE ACTUAL NUMBER OF ERRORS CAN BE DETERMINED FOR EACH ADDRESS LINE.

THE VALUES INDICATED ARE ONLY FOR ILLUSTRATION.)

FAILURE BY 4K SEGMENT

LO 4K = ----- HI 4K = 387

FAILURE BY PATTERN TEST

TEST	FAILURES	LOOPS
0	-----	-----
1	-----	2
2	178	8

(THE 0 ENTRY INDICATES ERRORS DETECTED BY THE INTERRUPT SUBROUTINE THAT DID NOT OCCUR DURING A PATTERN TEST. THERE WILL NEVER BE A LOOP COUNT DISPLAYED FOR THIS ENTRY.

FOR INTERNAL TESTING THE LOOP COUNTER WILL BE SOME MULTIPLE OF TWO, BUT FOR EXTERNAL TESTS THE LOOP COUNTER WILL BE A MULTIPLE OF ONE. THE LOOP COUNTER INDICATES THE RELATIVE AMOUNT OF TESTING DONE WHEN THE LOOP ON ROUTINE OPTION IS SELECTED.

THE VALUES INDICATED ARE ONLY FOR ILLUSTRATION.)

* NOTE - THE FAILURE BY PATTERN TEST SUMMARY IS PRINTED FOR EACH BSM TESTED. IF THERE WERE NO ERRORS DETECTED FOR A BSM, THE OTHER SUMMARIES ARE NOT WRITTEN.

5. COMMENTS

5.1 DESCRIPTION OF CORE FUNCTION TEST

5.1.1 INITIALIZATION AND HOUSEKEEPING

ROUTINES AND SUBROUTINES WITH THE LABELS AA000 - AA200 TAKE CARE OF ALL ASPECTS OF INITIALIZATION AND HOUSEKEEPING. THESE ROUTINES DETERMINE MACHINE SIZE, RECOGNIZE OPERATOR OPTIONS AND CONTROL INITIAL ENTRY AND RE-ENTRY TO THE CORE TEST.

5.1.2 CORE BEAT TEST

ROUTINE BB010 IS THE CORE BEAT TEST. THE WORST CASE PATTERN IS STORED IN THE STORAGE MODULE TO BE TESTED. THE PATTERN INDICATED BY THE OPERATOR IS STORED IN THE FIRST LOCATION TO BE TESTED AND A READ/WRITE CYCLE, A LOAD INSTRUCTION, IS EXECUTED 500,000 TIMES ON THE WORD. THE WORD IS CHECKED AND RESTORED AND THE NEXT WORD IS TESTED UNTIL THE END ADDRESS LIMIT IS ENCOUNTERED.

5.1.3 RANDOM DATA, MIXED OPERATIONS TEST

ROUTINE CC010 IS THE RANDOM DATA, MIXED OPERATIONS TEST. IT FILLS THE STORAGE MODULE UNDER TEST WITH RANDOM NUMBERS. EACH NUMBER IS PUT IN FOUR NONADJACENT POSITIONS FOR ERROR RECOVERY. SEVEN SUBROUTINES THAT INCLUDE ALL ARITHMETIC AND LOGICAL INSTRUCTIONS ARE ENTERED RANDOMLY TO EXERCISE THE MODULE UNDER TEST.

5.1.4 SUMMARY LOG ROUTINE

ROUTINE HZ100 CONTROLS THE PRINTING OF THE SUMMARY LOG. IF THERE WERE ERRORS DETECTED IN A BASIC STORAGE MODULE, A COMPLETE SUMMARY IS LOGGED ON THE MODULE. IF NO ERRORS WERE DETECTED, ONLY THE LOOP SUMMARY IS PRINTED FOR THE BASIC STORAGE MODULE.

5.1.5 INTERNAL INTERRUPT SUBROUTINES

SUBROUTINES WHOSE LABELS BEGIN WITH I HANDLE ALL ASPECTS OF INTERNAL INTERRUPTS. FOR SOME CHECKS, A LOG IS PRINTED AND AN ABNORMAL WAIT HALTS PROCESSING. FOR MOST PARITY ERRORS, DATA IS STORED FOR THE SUMMARY LOG, AN IMMEDIATE ERROR LOG IS PRINTED AND CONTROL RETURNS TO THE PATTERN TEST IN PROGRESS.

5.1.6 NON-INTERRUPT ERROR HANDLING

SUBROUTINES WHOSE LABELS BEGIN WITH J HANDLE ERRORS, THAT DO NOT CAUSE INTERRUPTS, DETECTED BY THE PATTERN TESTS. THESE SUBROUTINES STORE DATA ON THE ERROR FOR THE SUMMARY LOG AND PREPARE AN IMMEDIATE ERROR LOG. CONTROL RETURNS TO THE PATTERN TEST IN PROGRESS.

5.1.7 WRITE SUBROUTINES

SUBROUTINE MA010 CONTROLS THE WRITING OF MESSAGES ON THE 1443 OR 1816 OR 1053 PRINTERS. MESSAGES ARE STORED IN 1443 CODE AND CONVERTED IF THEY ARE TO BE WRITTEN ON THE 1816 OR 1053.

5.1.8 RELOCATION SUBROUTINES

SUBROUTINES WHOSE LABELS BEGIN WITH N HANDLE RELOCATION OF THE CORE FUNCTION TEST. RELOCATION CAN BE MADE BETWEEN THE 4K BLOCKS OF A BASIC STORAGE MODULE OR BETWEEN BASIC STORAGE MODULES.

5.1.9 TALLEY SUBROUTINES

SUBROUTINES WHOSE LABELS BEGIN WITH P ARE CALLED BY THE ERROR DETECTION SUBROUTINES AND ACTUALLY ANALYZE AND TALLEY THE ERRORS INTO THE SUMMARY TABLES.

5.1.10 SET ADDRESS LIMITS FOR PATTERN TESTS

SUBROUTINES SA010, SA100 AND SA200 DETERMINE THE ACTUAL ADDRESS LIMITS FOR THE PATTERN TEST. SA100 DETERMINES LIMITS WHEN THE TEST IS TO RIPPLE UP CORE AND SA200 DETERMINES LIMITS WHEN THE TEST IS TO RIPPLE DOWN CORE.

5.1.11 IMMEDIATE AND SUMMARY PRINT SUBROUTINES

ALL OTHER SUBROUTINES WHOSE LABELS BEGIN WITH S ARE CALLED TO EDIT AND PRINT THE ERROR AND SUMMARY LOGS. MOST OF THE SUBROUTINES ARE CALLED BY THE SUMMARY LOG ROUTINE, HZ100. THESE SUBROUTINES EDIT AND CONVERT DATA IN THE SUMMARY TABLES TO LINES OF 1443 CHARACTERS AND THEN CALL THE WRITE SUBROUTINE, MA010.

6. APPENDIX

6.1 RUNNING TIMES FOR PATTERN TESTS

TIME TO RUN THE CORE BEAT TEST IS VARIABLE AND DEPENDS ON THE NUMBER OF POSITIONS TO BE TESTED. IT TAKES ABOUT THREE SECONDS PER POSITION FOR A 2 MICROSECOND MEMORY AND FIVE SECONDS PER POSITION FOR A 4 MICROSECOND MEMORY.

THE RANDOM DATA, MIXED OPERATIONS TEST TAKES ABOUT NINE MINUTES TO RUN ON AN 8K MODULE OF 2 MICROSECOND MEMORY, WHEATHER IT IS AN INTERNAL OR EXTERNAL TEST.

----------LAST PAGE----------

```
0000 0              ZERO0 EQU     *                                        89F00020
3002                      ORG     ZERO0+/3002                              89F00030
                    ************************************************** 89F00040
                    *                                                * 89F00050
                    *     1800 EXTENDED CORE FUNCTION TEST           * 89F00060
                    *                                                * 89F00070
                    ************************************************** 89F00080
                    *                                                * 89F00090
                    * PROGRAM AND ERROR WAITS                        * 89F00100
                    *                                                * 89F00110
                    ************************************************** 89F00120
  B      I          *                                                * 89F00130
3002 1 001F               DC      WAT02+1    THE PROGRAM HAS BEEN READ* 89F00140
                    *                        SUCCESSFULLY.  SET DATA  * 89F00150
                    *                        ENTRY SWITCHES FOR PRO-  * 89F00160
                    *                        GRAM OPTIONS.            * 89F00170
                    *                                                 * 89F00180
                    ************************************************** 89F00190
                    *                                                * 89F00200
3003   0001               BSS     1                                     89F00210
                    *                                                * 89F00220
                    ************************************************** 89F00230
  B      I          *                                                * 89F00240
3004 1 002D               DC      WAT04+1    NONE OF THE STORAGE      * 89F00250
                    *                        MODULES HAVE BEEN        * 89F00260
                    *                        INDICATED FOR AN EXTERNAL* 89F00270
                    *                        TEST.  EITHER RESET      * 89F00280
                    *                        SWITCH 8, OR SET SWITCHES* 89F00290
                    *                        4-7 TO INDICATE A VALID  * 89F00300
                    *                        COMBINATION AND PRESS    * 89F00310
                    *                        START TO RE-INITIALIZE.  * 89F00320
                    *                                                 * 89F00330
                    ************************************************** 89F00340
                    *                                                * 89F00350
3005   0001               BSS     1                                     89F00360
                    *                                                * 89F00370
                    ************************************************** 89F00380
  B      I          *                                                * 89F00390
3006 1 003E               DC      WAT06+1    THIS 1800 HAS ONLY ONE   * 89F00400
                    *                        BSM.  IT IS NOT POSSIBLE * 89F00410
                    *                        TO RUN AN EXTERNAL TEST  * 89F00420
                    *                        ON A MACHINE WITH ONLY   * 89F00430
                    *                        ONE BSM.  RESET DATA     * 89F00440
                    *                        ENTRY SWITCHES 4-7 TO A  * 89F00450
                    *                        VALID COMBINATION AND    * 89F00460
                    *                        PRESS START TO RE-       * 89F00470
                    *                        INITIALIZE.              * 89F00480
                    *                                                 * 89F00490
                    ************************************************** 89F00500
                    *                                                * 89F00510
3007   0003               BSS     3                                     89F00520
                    *                                                * 89F00530
                    ************************************************** 89F00540
  B      I          *                                                * 89F00550
300A 1 0058               DC      WAT0A+1    A BSM HAS BEEN SPECIFIED * 89F00560
                    *                        BY SWITCHES 4-7 WHICH IS * 89F00570
                    *                        OUT OF RANGE FOR THIS    * 89F00580
                    *                        MACHINE.  RESET DATA     * 89F00590
                    *                        ENTRY SWITCHES 4-7 AND   * 89F00600
                    *                        PRESS START TO RE-       * 89F00610
                    *                        INITIALIZE.              * 89F00620
                    *                                                 * 89F00630
                    ************************************************** 89F00640
  B      I          *                                                * 89F00650
300B 1 0090               DC      WAT0B+1    AN INVALID PATTERN TEST  * 89F00660
                    *                        HAS BEEN SPECIFIED.      * 89F00670
                    *                        RESET SWITCHES 0-3 TO A  * 89F00680
                    *                        VALID COMBINATION AND    * 89F00690
```



```
                    *                        PRESS START TO RE-       * 89F00700
                    *                        INITIALIZE.              * 89F00710
                    *                                                 * 89F00720
                    ************************************************** 89F00730
  B      I          *                                                * 89F00740
300C 1 00A9               DC      WAT0C+1    WAIT BEFORE STARTING PAT-* 89F00750
                    *                        TERN TEST.               * 89F00760
                    *                                                 * 89F00770
                    ************************************************** 89F00780
                    *                                                * 89F00790
300D   0013               BSS     /13                                   89F00800
                    *                                                * 89F00810
                    ************************************************** 89F00820
                    *                                                * 89F00830
                    * THE FOLLOWING FOUR WAITS PERTAIN TO THE CORE   * 89F00840
                    * BEAT TEST ONLY.                                * 89F00850
                    *                                                * 89F00860
                    ************************************************** 89F00870
  B      I          *                                                * 89F00880
3020 1 00E5               DC      WAT20+1    THE CORE BEAT PATTERN    * 89F00890
                    *                        TEST HAS BEEN ENTERED.   * 89F00900
                    *                        THE OPERATOR MUST SUPPLY * 89F00910
                    *                        THE PATTERN THAT EACH    * 89F00920
                    *                        CORE POSITION IS TO BE   * 89F00930
                    *                        EXERCISED WITH.  THE BIT * 89F00940
                    *                        PATTERN SHOULD BE SET    * 89F00950
                    *                        IN DATA ENTRY SWITCHES   * 89F00960
                    *                        0-15.  IF THE STORAGE    * 89F00970
                    *                        PROTECT BIT IS TO BE     * 89F00980
                    *                        INCLUDED IN THE TEST     * 89F00990
                    *                        PATTERN, INDICATE IT BY  * 89F01000
                    *                        SETTING SENSE SWITCH 0.  * 89F01010
                    *                        PRESS START AND THE      * 89F01020
                    *                        SWITCHES WILL BE READ AND* 89F01030
                    *                        THE PROGRAM WILL CON-    * 89F01040
                    *                        TINUE.                   * 89F01050
                    *                                                 * 89F01060
                    ************************************************** 89F01070
  B      I          *                                                * 89F01080
3021 1 00F9               DC      WAT21+1    IF THE STORAGE MODULE TO * 89F01090
                    *                        TEST IS EXPLICITLY       * 89F01100
                    *                        DEFINED OR IS TO BE      * 89F01110
                    *                        EXTERNALLY TESTED, THE   * 89F01120
                    *                        PROGRAM WILL ASK FOR THE * 89F01130
                    *                        STARTING ADDRESS LIMIT.  * 89F01140
                    *                        ENTER THE ADDRESS IN     * 89F01150
                    *                        DATA ENTRY SWITCHES 0-15.* 89F01160
                    *                        PRESS START AND THE      * 89F01170
                    *                        SWITCHES WILL BE READ    * 89F01180
                    *                        AND THE PROGRAM WILL     * 89F01190
                    *                        CONTINUE.                * 89F01200
                    *                        **NOTE - STORAGE         * 89F01210
                    *                        LOCATIONS 0-9 ARE NOT    * 89F01220
                    *                        ACCEPTED AS STARTING     * 89F01230
                    *                        ADDRESSES SINCE THEY ARE * 89F01240
                    *                        RESTART AND INTERUPT     * 89F01250
                    *                        TRANSFER VECTORS.  THE   * 89F01260
                    *                        LOWEST VALID STARTING    * 89F01270
                    *                        ADDRESS IS /000A.        * 89F01280
                    *                                                 * 89F01290
                    ************************************************** 89F01300
                    *                                                * 89F01310
  B      I          *                                                * 89F01320
3022 1 0109               DC      WAT22+1    IF THE STORAGE MODULE TO * 89F01330
                    *                        TEST IS EXPLICITLY       * 89F01340
                    *                        DEFINED OR IS TO BE      * 89F01350
                    *                        EXTERNALLY TESTED, THE   * 89F01360
                    *                        PROGRAM WILL ASK FOR THE * 89F01370
                    *                        END ADDRESS LIMIT.  ENTER* 89F01380
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                *                    THE ADDRESS IN DATA ENTRY* 89F01380
                *                    SWITCHES 0-15.  PRESS    * 89F01390
                *                    START AND THE SWITCHES   * 89F01400
                *                    WILL BE READ AND THE     * 89F01410
                *                    PROGRAM WILL CONTINUE.   * 89F01420
                *                                             * 89F01430
                ************************************************ 89F01440
                *                                             * 89F01450
   B     I      *                                             * 89F01460
3023 1 0119     *    DC      WAT23+1    RESTORE DES. 0-15 TO THE * 89F01460
                *                    PREVIOUS SETTING         * 89F01470
                *                    INDICATING BSM, TEST AND * 89F01480
                *                    PROGRAM OPTIONS.  PRESS  * 89F01490
                *                    START TO EXECUTE THE CORE* 89F01500
                *                    BEAT TEST.               * 89F01510
                *                    **NOTE - THE DATA ENTRY  * 89F01520
                *                    SWITCHES MUST BE RESET TO* 89F01530
                *                    THE PREVIOUS PROGRAM     * 89F01540
                *                    OPTION SETTING FOR THE   * 89F01550
                *                    CORE BEAT TEST TO WORK   * 89F01560
                *                    CORRECTLY.               * 89F01570
                *                                             * 89F01580
                ************************************************ 89F01590
                *                                             * 89F01600
3024   000C             BSS     /C                           * 89F01610
                *                                             * 89F01620
                ************************************************ 89F01630
   B     I      *                                             * 89F01640
3030 1 0762     *    DC      WAT30+1    1443 ERROR.  RESET 1443  * 89F01650
                *                    OR SET SWITCH 9 TO USE   * 89F01660
                *                    THE 1816.  PRESS START TO* 89F01670
                *                    CONTINUE.                * 89F01680
                *                                             * 89F01690
                ************************************************ 89F01700
   B     I      *                                             * 89F01710
3031 1 0765     *    DC      WAT31+1    1443 NOT READY.  MAKE    * 89F01720
                *                    1443 READY OR SET SWITCH * 89F01730
                *                    9 TO USE THE 1816.  PRESS* 89F01740
                *                    START TO CONTINUE.       * 89F01750
                *                                             * 89F01760
                ************************************************ 89F01770
   B     I      *                                             * 89F01780
3032 1 07AF     *    DC      WAT32+1    1816 OR 1053 NOT READY.  * 89F01790
                *                    READY PRINTER AND PRESS  * 89F01800
                *                    START.                   * 89F01810
                *                                             * 89F01820
                ************************************************ 89F01830
                *                                             * 89F01840
3033   001D             BSS     /1D                            89F01850
                *                                             * 89F01860
                ************************************************ 89F01870
   B     I      *                                             * 89F01880
3050 1 0456     *    DC      WAT50+1    END OF CORE FUNCTION TEST* 89F01890
                *                                             * 89F01900
                ************************************************ 89F01910
                *                                             * 89F01920
3051   0021             BSS     /21                          * 89F01930
                *                                             * 89F01940
                ************************************************ 89F01950
   B     I      *                                             * 89F01960
3072 1 0520     *    DC      WAT72+1    HALT ON ERROR.  DES. 14  * 89F01970
                *                    IS ON.  THIS ERROR WAS   * 89F01980
                *                    DETECTED BY THE INTERNAL * 89F01990
                *                    INTERRUPT.               * 89F02000
                *                                             * 89F02010
                ************************************************ 89F02020
                *                                             * 89F02030
3073   0001             BSS     1                            * 89F02040
                *                                             * 89F02050
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                ************************************************ 89F02060
                *                                             * 89F02070
   B     I      *                                             * 89F02080
3074 1 0648     *    DC      WAT74+1    CAR CHECK ERROR DETECTED * 89F02080
                *                    ON 1443.  PRESS START TO * 89F02090
                *                    RETRY WRITING.  NO LOG.  * 89F02100
                *                                             * 89F02110
                ************************************************ 89F02120
                *                                             * 89F02130
   B     I      *                                             * 89F02140
3075 1 065B     *    DC      WAT75+1    FALSE CAR CHECK.  PRESS  * 89F02140
                *                    START TO CONTINUE.  RUN  * 89F02150
                *                    CAR CHECK PROGRAM AFTER  * 89F02160
                *                    CORE FUNCTION TEST       * 89F02170
                *                    COMPLETES.               * 89F02180
                *                                             * 89F02190
                ************************************************ 89F02200
   B     I      *                                             * 89F02210
3076 1 0677     *    DC      WAT76+1    NO INTERRUPT CONDITION   * 89F02220
                *                    SENSED FOR INTERNAL      * 89F02230
                *                    INTERRUPT.  PRESS START  * 89F02240
                *                    TO CONTINUE.             * 89F02250
                *                                             * 89F02260
                ************************************************ 89F02270
                *                                             * 89F02280
   B     I      *                                             * 89F02290
3077 1 0669     *    DC      WAT77+1    AUX CORE ERROR. AN INTER-* 89F02290
                *                    NAL INTERRUPT WAS GEN-   * 89F02300
                *                    ERATED WHILE AUX CORE WAS* 89F02310
                *                    SELECTED                 * 89F02320
                *                                             * 89F02330
                ************************************************ 89F02340
                *                                             * 89F02350
   B     I      *                                             * 89F02360
3078 1 06A1     *    DC      WAT78+1    HALT ON ERROR.  DES. 14  * 89F02360
                *                    IS ON.  THIS ERROR WAS   * 89F02370
                *                    DETECTED BY THE PATTERN  * 89F02380
                *                    TEST EXERCISE ROUTINE.   * 89F02390
                *                                             * 89F02400
                ************************************************ 89F02410
                *                                             * 89F02420
3079   0078             BSS     /78                            89F02430
                *                                             * 89F02440
                ************************************************ 89F02450
                *                                             * 89F02460
   B     I      *                                             * 89F02470
30F1 1 04C0     *    DC      WATF1+1    AN OP CODE CHECK WAS     * 89F02470
                *                    DETECTED AT THE ADDRESS  * 89F02480
                *                    PRINTED IN THE ERROR LOG.* 89F02490
                *                    IF THE OP CODE CHECK WAS * 89F02500
                *                    CAUSED BY A PARITY ERROR,* 89F02510
                *                    THAT ERROR IS ALSO LOGGED* 89F02520
                *                    IF DES. 13 IS OFF.  THIS * 89F02530
                *                    IS AN UNRECOVERABLE ER-  * 89F02540
                *                    ROR.  IF THE ERROR DID   * 89F02550
                *                    NOT OCCUR IN THE SUMMARY * 89F02560
                *                    LOG, WRITE OR INTERRUPT  * 89F02570
                *                    ROUTINES, PRESSING START * 89F02580
                *                    WILL START THE SUMMARY   * 89F02590
                *                    LOG.                     * 89F02600
                *                                             * 89F02610
                ************************************************ 89F02620
   B     I      *                                             * 89F02630
30F2 1 0537     *    DC      WATF2+1    ONE OR MORE INTERNAL     * 89F02640
                *                    INTERRUPTS HAS OCCURRED  * 89F02650
                *                    IN THE INTERNAL INTERRUPT* 89F02660
                *                    SUBROUTINE.  THIS IS AN  * 89F02670
                *                    UNRECOVERABLE ERROR, DO  * 89F02680
                *                    NOT PRESS START.  IT MAY * 89F02690
                *                    BE POSSIBLE TO GET THE   * 89F02700
                *                    SUMMARY LOG BY PRESSING  * 89F02710
                *                    RESET, SETTING DES. 0-3  * 89F02720
                *                    ON AND PRESSING START.   * 89F02730
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                    *                          AFTER THE HEADING HAS    * 89F02740
                    *                          PRINTED, PRESS START     * 89F02750
                    *                          AGAIN.                   * 89F02760
                    *                                                   * 89F02770
                    ***************************************************** 89F02780
  B     I           *                                                   * 89F02790
30F3 1 0539               DC       WATF3+1    A PARITY ERROR WAS       * 89F02800
                    *                          DETECTED WITHIN THE CORE * 89F02810
                    *                          FUNCTION TEST PROGRAM.   * 89F02820
                    *                          THIS IS AN UNRECOVERABLE * 89F02830
                    *                          ERROR.  DO NOT PRESS     * 89F02840
                    *                          START.  IF THE ERROR DID * 89F02850
                    *                          NOT OCCUR IN THE SUMMARY * 89F02860
                    *                          LOG OR WRITE ROUTINES, IT* 89F02870
                    *                          MAY BE POSSIBLE TO GET   * 89F02880
                    *                          THE SUMMARY LOG.  PRESS  * 89F02890
                    *                          RESET AND SET DES. 0-3   * 89F02900
                    *                          ON.  PRESS START AND     * 89F02910
                    *                          AFTER THE HEADING PRINTS,* 89F02920
                    *                          PRESS START AGAIN.       * 89F02930
                    *                                                   * 89F02940
                    ***************************************************** 89F02950
  B     I           *                                                   * 89F02960
30F4 1 0641               DC       WATF4+1    A PARITY ERROR HAS OC-   * 89F02970
                    *                          CURRED IN THE RANDOM DATA* 89F02980
                    *                          BUT IT IS IMPOSSIBLE TO  * 89F02990
                    *                          DETERMINE THE ORIGINAL   * 89F03000
                    *                          DATA.  THIS IS AN UNRE-  * 89F03010
                    *                          COVERABLE ERROR.  IT IS  * 89F03020
                    *                          POSSIBLE TO RESET THE    * 89F03030
                    *                          MACHINE AND SELECT THE   * 89F03040
                    *                          SUMMARY LOG.             * 89F03050
                    *                                                   * 89F03060
                    ***************************************************** 89F03070
                    *                                                   * 89F03080
                    * POTPOURRI                                         * 89F03090
                    *                                                   * 89F03100
                    ***************************************************** 89F03110
                    *                                                   * 89F03120
0000 0              ZERO   EQU     0          ZERO                      89F03130
0001 0              ONE    EQU     1          ONE                       89F03140
0002 0              TWO    EQU     2          TWO                       89F03150
0003 0              THREE  EQU     3          THREE                     89F03160
0004 0              FOUR   EQU     4          FOUR                      89F03170
0005 0              FIVE   EQU     5          FIVE                      89F03180
0006 0              SIX    EQU     6          SIX                       89F03190
0007 0              SEVEN  EQU     7          SEVEN                     89F03200
0008 0              EIGHT  EQU     8          EIGHT                     89F03210
0009 0              NINE   EQU     9          NINE                      89F03220
000A 0              TEN    EQU     10         TEN                       89F03230
0010 0              EXCHA  EQU     16         SHIFT COUNT.              89F03240
                    *                                                 * 89F03250
                    ***************************************************** 89F03260
0000                       ORG     ZERO0                                89F03270
0000 0              AA000  EQU     *                                    89F03280
                    *                                                   89F03290
                    * THE FOLLOWING ROUTINE DETERMINES THE HIGHEST CORE 89F03300
                    * ADDRESS AND PLACES IT IN AAC04.  IT WILL ONLY BE  89F03310
                    * EXECUTED ONCE.                                    89F03320
                    *                                                   89F03330
0000 0 61FF                LDX    1 -1       LOAD /FFFF INTO XR1.      89F03340
0001 0 6D00 FFFF           STX    L1 /FFFF   STORE /FFFF IN HI ADDRESS. 89F03350
0003 0 1810                SRA    16         STORE ZERO IN HI ADDRESS. 89F03360
0004 0              AA001  EQU     *                                    89F03370
0004 0 7500 2000           MDX    L1 /2000   INCREMENT BY 8K.          89F03380
0006 0 1000                NOP               IGNORE SKIPS.             89F03390
0007 0 D100                STO    1 ZERO                               89F03400
0008 0 7400 FFFF           MDX    L0 /FFFF,0 TEST HIGHEST CORE FOR ZERO 89F03410
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000A 0 70F9                B      AA001      CONTINUE TEST NOT ZERO.   89F03420
000B 0 694E                STX    1 AAC04    SAVE HIGHEST ADDRESS.     89F03430
000C 0 4056                BSI    AA050      INITIALIZE BASE REGISTER. 89F03440
                    *                                                  89F03450
                    * DETERMINE NUMBER OF BASIC STORAGE MODULES.       89F03460
                    *                                                  89F03470
000D 0 C04C                LD     AAC04      SAVE HIGHEST ADDRESS FOR  89F03480
000E 0 D700 04AC           STO    L3 II250+1-BASE  INTERRUPT SEARCH.  GET 89F03490
0010 0 180D                SRA    13         BSM NUMBER.               89F03500
0011 0 8047                A      AAC02      ADJUST.                   89F03510
0012 0 D047                STO    AAC04      SAVE IN AAC04.            89F03520
0013 0 4700 08FB           BSI    L3 PT010-BASE  ZERO SUMMARY STORAGE.  89F03530
0015 0              AA020  EQU    *                                    89F03540
0015 0 4700 06DA           BSI    L3 MA010-BASE  SPACE ONE LINE.       89F03550
0017 0 F000                DC     /F000      LINE FUNCTION.            89F03560
0018 0 4700 06DA           BSI    L3 MA010-BASE  PID MESSAGE.          89F03570
001A 0 0C1B                DC     MSG01-BASE  MESSAGE.                 89F03580
001B 0 4700 06DA           BSI    L3 MA010-BASE  SET PROGRAM SWITCHES.  89F03590
001D 0 0C26                DC     MSG02-BASE  MESSAGE.                 89F03600
001E 0 3002         WAT02  WAIT   /02         WAIT FOR SWITCH SETTINGS  89F03610
                    *                                                  89F03620
                    * CHECK FOR EXPLICIT OR EXTERNAL BSM TEST.         89F03630
                    *                                                  89F03640
001F 0              AA022  EQU    *                                    89F03650
001F 0 0872                XIO    AAC50      CHECK DES 4-7.            89F03660
0020 0 1004                SLA    FOUR       GET RID OF OTHER SWITCHES. 89F03670
0021 0 180C                SRA    12                                   89F03680
0022 0 4820                SKP    Z          SKIP IF NONE SET.         89F03690
0023 0 700A                B      AA030      BRANCH FOR EXPLICIT TEST. 89F03700
0024 0 D039                STO    AAC10      ALL MODULES TO BE TESTED. 89F03710
0025 0 086C                XIO    AAC50      TEST FOR DES 8.           89F03720
0026 0 1008                SLA    EIGHT      SHOULD BE OFF.            89F03730
0027 0 4810                SKP    -          SKIP IF ON.               89F03740
0028 0 7058                B      AA100      BRANCH IF OFF.            89F03750
0029 0 4700 06DA           BSI    L3 MA010-BASE  ILLEGAL DES SETTING.  89F03760
002B 0 0C2E                DC     MSG03-BASE  MESSAGE.                 89F03770
002C 0 3004         WAT04  WAIT   /04         WAIT.                     89F03780
002D 0 70F1                B      AA022      RETRY TEST.               89F03790
002E 0              AA030  EQU    *                                    89F03800
002E 0 D02F                STO    AAC10      SAVE SW. SET. AS BSM KEY. 89F03810
002F 0 902A                S      AAC04      COMPARE TO MAX BSM.       89F03820
0030 0 4830                SKP    -Z         SKIP IF VALID BSM.        89F03830
0031 0 7022                B      AA040      BRANCH IF ILLEGAL BSM.    89F03840
0032 0 085F                XIO    AAC50      TEST FOR DES SWITCH 8.    89F03850
0033 0 1008                SLA    EIGHT                                89F03860
0034 0 4810                SKP    -          SKIP IF ON.               89F03870
0035 0 701B                B      AA038      BRANCH IF OFF.            89F03880
0036 0 C023                LD     AAC04      MAKE SURE THAT THERE ARE  89F03890
0037 0 9021                S      AAC02      AT LEAST TWO BSMS.        89F03900
0038 0 4830                SKP    -Z         SKIP IF NOT.              89F03910
0039 0 7005                B      AA034      BRANCH IF ALL RIGHT.      89F03920
003A 0 4700 06DA           BSI    L3 MA010-BASE  PRINT ERROR MESSAGE.  89F03930
003C 0 0C35                DC     MSG04-BASE  MESSAGE.                 89F03940
003D 0 3006         WAT06  WAIT   /06         WAIT.                     89F03950
003E 0 70E0                B      AA022      RETURN TO TEST.           89F03960
003F 0              AA034  EQU    *          MAKE SURE CFT NOT IN BSM  89F03970
003F 0 C301                LD     3 ONE      FOR EXTERNAL TEST.        89F03980
0040 0 180C                SRA    12                                   89F03990
0041 0 8017                A      AAC02                                89F04000
0042 0 1801                SRA    ONE                                  89F04010
0043 0 F01A                EOR    AAC10      COMPARE TO EXPLICIT BSM.  89F04020
0044 0 4820                SKP    Z          SKIP IF EQUAL.            89F04030
0045 0 703B                B      AA100      BRANCH TO EXECUTE.        89F04040
0046 0 C301                LD     3 ONE      SEE IF POSSIBLE TO        89F04050
0047 0 180D                SRA    13         RELOCATE TO NEXT LOWER    89F04060
0048 0 9010                S      AAC02      BSM.                      89F04070
0049 0 4810                SKP    -          SKIP NOT POSSIBLE.        89F04080
004A 0 7003                B      AA036      BRANCH TO RELOCATE.       89F04090
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004B 0 C301              LD    3 ONE        RELOCATE TO NEXT          89F04100
004C 0 180D              SRA     13         HIGHER BSM.               89F04110
004D 0 800B              A       AAC02                                89F04120
004E 0                AA036 EQU     *        RELOCATE CORE TEST TO     89F04130
004E 0 800A              A       AAC02      ANOTHER BSM FOR EXTERNAL  89F04140
004F 0 4F00 0787         B     L3 NA010-BASE  TEST.                   89F04150
0051 0                AA038 EQU     *                                  89F04160
0051 0 C00C              LD      AAC10      INDICATE BSM TO RELOCATE  89F04170
0052 0 4F00 0787         B     L3 NA010-BASE  AND RELOCATE.           89F04180
0054 0                AA040 EQU     *        ILLEGAL BSM INDICATED.    89F04190
0054 0 4700 06DA         BSI   L3 MA010-BASE  PRINT ERROR MESSAGE.     89F04200
0056 0 0C3D              DC      MSG06-BASE   MESSAGE.                 89F04210
0057 0 300A           WATOA WAIT    /0A        ERROR WAIT.               89F04220
0058 0 70C6              B       AA022        RETURN TO TEST.           89F04230
                      ************************************************* 89F04240
                      *                                               * 89F04250
                      * CONSTANTS AND WORK AREAS                      * 89F04260
                      *                                               * 89F04270
                      ************************************************* 89F04280
                      *                                               * 89F04290
0059 0 0001           AAC02 DC      1          INCREMENT.                89F04300
005A   0001           AAC04 BSS     1          NO. OF BSMS, 1-8.         89F04310
005C   0001           AAC06 BSS   E 1          IOCC TO SENSE THE SENSE   89F04320
005D 0 0760              DC      /0760        SWITCHES.                 89F04330
005E   0001           AAC10 BSS     1          BSM KEY STORAGE.          89F04340
005F 0 7003           AAC20 B     X THREE      BRANCH FROM WORD 0 TO 4.  89F04350
                      *                        OP CODE, FORMAT FOR       89F04360
0060 0 4C00           AAC22 DC      /4C00      BRANCH LONG.              89F04370
0061 0 FFB0           AAC24 DC      AA020-BASE  DISPLACEMENT OF AA020.   89F04380
0062 0 0476           AAC26 DC      II010-BASE  DISPLACEMENT FOR II010.  89F04390
                      *                                             * 89F04400
                      ************************************************* 89F04410
                      ************************************************* 89F04420
                      *                                               * 89F04430
                      * INITIALIZE BASE REGISTER                      * 89F04440
                      *                                               * 89F04450
                      ************************************************* 89F04460
                      *                                               * 89F04470
                      * THIS SUBROUTINE INITIALIZES THE BASE REGISTER IN* 89F04480
                      * XR3, THE INTERNAL INTERRUPT CELL IN CORE STORAGE* 89F04490
                      * POSITION 8 AND THE RESTART BRANCHES IN LOW CORE.* 89F04500
                      *                                               * 89F04510
                      * CALL -                                        * 89F04520
                      *                                               * 89F04530
                      *     BSI      AA050       THE CALL MUST BE A SHORT * 89F04540
                      *                          INSTRUCTION.         * 89F04550
                      *                                               * 89F04560
                      *     XR1 MUST BE UNSPECIFIED.                  * 89F04570
                      *                                               * 89F04580
                      *     XR2 IS NOT USED.                          * 89F04590
                      *                                               * 89F04600
                      *     XR3 IS INITIALIZED AS THE PSEUDO BASE     * 89F04610
                      *     REGISTER.                                 * 89F04620
                      *                                               * 89F04630
                      ************************************************* 89F04640
                      *                                               * 89F04650
0063 0 0000           AA050 DC      *-*                                 89F04660
0064 0 6801              STX     0 BASE+1     PUTS ADDRESS OF BASE IN   89F04670
0065 0 6700 0000      BASE LDX   L3 *-*        INDEX REGISTER 3.         89F04680
0067 0 6100              LDX     1 ZERO       XR1 POINTER TO WORD ZERO  89F04690
0068 0 C0F6              LD      AAC20        SET RESTART BRANCHES      89F04700
0069 0 D100              STO     1 ZERO       IN LOW CORE.              89F04710
006A 0 C0F5              LD      AAC22        PUT BRANCH LONG TO        89F04720
006B 0 D104              STO     1 FOUR       AA020 IN LOW CORE.        89F04730
006C 0 C301              LD    3 ONE                                    89F04740
006D 0 80F3              A       AAC24                                  89F04750
006E 0 D105              STO     1 FIVE                                 89F04760
006F 0 C301              LD    3 ONE          INITIALIZE INTERNAL       89F04770
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0070 0 80F1              A       AAC26        INTERRUPT CELL.           89F04780
0071 0 D108              STO   1 EIGHT                                  89F04790
0072 0 C024              LD      AAC60        COMPUTE ABSOLUTE ADDRESS  89F04800
0073 0 8301              A     3 ONE          OF BASE OF TEST PATTERN   89F04810
0074 0 D024              STO     AAC64        AREA IN LINE BUFFER.      89F04820
0075 0 C022              LD      AAC62        COMPUTE ABSOLUTE ADDRESS  89F04830
0076 0 8301              A     3 ONE          OF BASE OF FAILURE PATTERN 89F04840
0077 0 D022              STO     AAC66        AREA IN LINE BUFFER.      89F04850
0078 0 4F80 FFFE         B     I3 AA050-BASE  RETURN.                   89F04860
                      ************************************************* 89F04870
                      *                                               * 89F04880
                      * RE-ENTRY SUBROUTINE                           * 89F04890
                      *                                               * 89F04900
                      ************************************************* 89F04910
                      *                                               * 89F04920
                      * THIS ROUTINE RESTORES CONTROL TO THE PATTERN   * 89F04930
                      * TEST THAT INITIATED THE RELOCATION.           * 89F04940
                      *                                               * 89F04950
                      * CALL -                                        * 89F04960
                      *                                               * 89F04970
                      *     BSI  L  AA080      THE CALLING ROUTINE MUST * 89F04980
                      *                        CALCULATE THE ENTRY    * 89F04990
                      *                        ADDRESS.               * 89F05000
                      *     DC      XXXXX-BASE  THE CALLING ROUTINE ALSO* 89F05010
                      *                        SUPPLIES THE RELATIVE  * 89F05020
                      *                        RE-ENTRY ADDRESS.      * 89F05030
                      *                                               * 89F05040
                      *     XR1 AND XR2 ARE NOT USED.                 * 89F05050
                      *                                               * 89F05060
                      *     XR3 IS RE-INITIALIZED AS THE PSEUDO BASE  * 89F05070
                      *     REGISTER.                                 * 89F05080
                      *                                               * 89F05090
                      ************************************************* 89F05100
                      *                                               * 89F05110
007A 0 0000           AA080 DC      *-*        ENTRY.                    89F05120
                      *                        INITIALIZE.  THIS INSTRUC- 89F05130
007B 0 40E7              BSI     AA050        TION MUST ALWAYS BE SHORT. 89F05140
007C 0 C780 0015         LD    I3 AA080-BASE  GET RELATIVE DISPLACEMENT 89F05150
007E 0 D001              STO     AA085+1      OF RETURN ENTRY AND STORE  89F05160
007F 0 4F00 0000      AA085 B    L3 *-*        IN BRANCH OPERAND.        89F05170
                      ************************************************* 89F05180
                      *                                               * 89F05190
                      * HOUSEKEEPING                                  * 89F05200
                      *                                               * 89F05210
                      ************************************************* 89F05220
0081 0                AA100 EQU     *                                   89F05230
0081 0 0810              XIO     AAC50        SENSE DATA ENTRY SWITCHES 89F05240
0082 0 180C              SRA     12           AND GET SWITCHES 0-3.     89F05250
0083 0 D010              STO     AAC52        SAVE EXPLICIT ROUTINE NO. 89F05260
0084 0 9010              S       AAC56        IF DES. 0-3 ARE 0 OR 1    89F05270
0085 0 4F28 006F         BN    L3 BB010-BASE  ENTER TEST AT BB010, IF   89F05280
0087 0 4F18 021D         BZ    L3 CC010-BASE  THEY ARE TWO, ENTER AT    89F05290
0089 0 F00C              EOR     AAC58        CC010, IF THEY ARE 15,    89F05300
008A 0 4F18 03BF         BZ    L3 HZ100-BASE  ENTER SUMMARY, OTHERWISE  89F05310
008C 0 4700 06DA         BSI   L3 MA010-BASE  SEND ERROR MESSAGE.      89F05320
008E 0 0C80              DC      MSG10-BASE                            89F05330
008F 0 300B           WATOB WAIT    /0B        ERROR WAIT.               89F05340
0090 0 70C7              B       WATOA+1      READ SWITCHES AGAIN.      89F05350
                      ************************************************* 89F05360
                      *                                               * 89F05370
                      * CONSTANTS AND WORK AREAS                      * 89F05380
                      *                                               * 89F05390
                      ************************************************* 89F05400
                      *                                               * 89F05410
0092   0001           AAC50 BSS   E 1          IOCC TO SENSE DES.        89F05420
0093 0 0740              DC      /0740                                  89F05430
0094   0001           AAC52 BSS     1          ROUTINE NUMBER.           89F05440
0095 0 0002           AAC56 DC      2          TWO.                      89F05450
```

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0096 0 000D          AAC58 DC      13          ID. PATTERN SUMMARY.        89F05460
                     *                         RELATIVE ADDRESS OF TEST    89F05470
0097 0 0BCF          AAC60 DC      SUC88-BASE  PATTERN AREA.               89F05480
                     *                         RELATIVE ADDRESS OF         89F05490
0098 0 0BDB          AAC62 DC      SUC90-BASE  FAILURE PATTERN AREA.       89F05500
0099   0001          AAC64 BSS     1           ABSOLUTE ADDRESS OF SUC88.  89F05510
009A   0001          AAC66 BSS     1           ABSOLUTE ADDRESS OF SUC90.  89F05520
                     *                                                     * 89F05530
                     ******************************************************* 89F05540
                     *                                                       89F05550
                     * LOWER ADDRESS LIMIT OF PATTERN TESTS.                 89F05560
                     *                                                       89F05570
009B 0               PTEST EQU     *                                       89F05580
                     ******************************************************* 89F05590
                     *                                                     * 89F05600
                     * PREPROCESSING WAIT SUBROUTINE                       * 89F05610
                     *                                                     * 89F05620
                     ******************************************************* 89F05630
                     *                                                     * 89F05640
                     * THIS SUBROUTINE TESTS DATA ENTRY SWITCH 15 AND      * 89F05650
                     * PROVIDES FOR A PREPROCESSING WAIT IF IT IS ON.      * 89F05660
                     *                                                     * 89F05670
                     * CALL -                                              * 89F05680
                     *                                                     * 89F05690
                     *     BSI  L3 AB010-BASE                              * 89F05700
                     *                                                     * 89F05710
                     *     XR1 AND XR2 ARE NOT USED.                       * 89F05720
                     *                                                     * 89F05730
                     *     XR3 IS THE PSEUDO BASE REGISTER.                * 89F05740
                     *                                                     * 89F05750
                     ******************************************************* 89F05760
                     *                                                     * 89F05770
009B 0 0000          AB010 DC      *-*         ENTRY.                      89F05780
009C 0 0B2D                XIO    3 AAC50-BASE SENSE DATA ENTRY SWS        89F05790
009D 0 4804                SKP    E           SKIP IF OFF.                89F05800
009E 0 7001                B      AB015       SKIP IF ON.                 89F05810
009F 0 7009                B      AB020       BRANCH IF OFF.              89F05820
00A0 0               AB015 EQU    *                                       89F05830
00A0 0 6A0B                STX    2 ABC92     CONVERT ROUTINE ID. TO      89F05840
00A1 0 C00A                LD      ABC92      TWO 1443 CHARACTERS.        89F05850
00A2 0 4700 0437           BSI    L3 IC010-BASE  STORE IN MESSAGE.        89F05860
00A4 0 D007                STO     ABC92                                  89F05870
00A5 0 4700 06DA           BSI    L3 MA010-BASE  WRITE MESSAGE.           89F05880
00A7 0 0046                DC      ABC90-BASE  MESSAGE.                   89F05890
00A8 0 300C          WAT0C WAIT    /0C         WAIT.                       89F05900
00A9 0               AB020 EQU    *                                       89F05910
00A9 0 4F80 0036           B     I3 AB010-BASE  RETURN.                   89F05920
                     *                                                     * 89F05930
                     ******************************************************* 89F05940
                     *                                                     * 89F05950
                     * CONSTANTS AND MESSAGE                               * 89F05960
                     *                                                     * 89F05970
                     ******************************************************* 89F05980
                     *                                                     * 89F05990
00AB 0 0005          ABC90 DC      5           MESSAGE.                    89F06000
00AC 0 0000          ABC92 DC      /0000       MESSAGE ID., FILLED IN.     89F06010
00AD 0 0A0A                DC      /0A0A       00                          89F06020
00AE 0 0000                DC      /0000                                   89F06030
00AF 0 1631                DC      /1631       WA                          89F06040
00B0 0 3913                DC      /3913       IT                          89F06050
                     *                                                     * 89F06060
                     ******************************************************* 89F06070
                     ******************************************************* 89F06080
                     *                                                     * 89F06090
                     * SET STATUS FLAG WORD                                * 89F06100
                     *                                                     * 89F06110
                     ******************************************************* 89F06120
                     *                                                     * 89F06130
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                     * THIS SUBROUTINE BUILDS A WORD OF FIVE FLAGS        * 89F06140
                     * TO INDICATE THE STATUS OF THE PROGRAM AFTER        * 89F06150
                     * A PATTERN TEST.                                    * 89F06160
                     *                                                     * 89F06170
                     * UPON EXIT THREE OF THE FLAGS WILL BE IN THE         * 89F06180
                     * ACCUMULATOR, BITS 13-15, AND TWO OF THE FLAGS       * 89F06190
                     * WILL BE IN THE EXTENSION, BITS 0 & 1.               * 89F06200
                     *                                                     * 89F06210
                     * CALL -                                              * 89F06220
                     *                                                     * 89F06230
                     *     BSI  L3 AC010-BASE                              * 89F06240
                     *                                                     * 89F06250
                     *     XR1 AND XR2 ARE NOT USED.                       * 89F06260
                     *                                                     * 89F06270
                     *     XR3 IS THE PSEUDO BASE REGISTER.                * 89F06280
                     *                                                     * 89F06290
                     * THE SIGNIFICANCE OF THE VALUE IN THE ACCUMULATOR    * 89F06300
                     * IS -                                                * 89F06310
                     *                                                     * 89F06320
                     *     0 -     FULL, NORMAL TEST.                      * 89F06330
                     *     1 -     LOOP ON ROUTINE.                        * 89F06340
                     *     2 -     EXPLICIT BSM TEST.                      * 89F06350
                     *     3 -     LOOP ON ROUTINE IN AN EXPLICIT BSM.     * 89F06360
                     *     4 -     EXTERNAL BSM TEST.                      * 89F06370
                     *     5 -     LOOP ON ROUTINE IN EXTERNAL BSM TEST    * 89F06380
                     *     6 & 7   ARE NOT USED.                           * 89F06390
                     *                                                     * 89F06400
                     * THE SIGNIFIGANCE OF THE VALUES IN THE Q IS -        * 89F06410
                     *                                                     * 89F06420
                     *     0 -     PROGRAM RESIDES IN LOW HALF OF BSM.     * 89F06430
                     *     1 -     PROGRAM RESIDES IN HIGH HALF OF BSM.    * 89F06440
                     *     2 -     PROGRAM IS IN LOW HALF OF THE LAST      * 89F06450
                     *             BSM.                                    * 89F06460
                     *     3 -     PROGRAM IS IN THE HIGH HALF OF THE      * 89F06470
                     *             LAST BSM.                               * 89F06480
                     *                                                     * 89F06490
                     ******************************************************* 89F06500
                     *                                                     * 89F06510
00B1 0 0000          AC010 DC      *-*         ENTRY.                      89F06520
00B2 0 0B2D                XIO    3 AAC50-BASE TEST FOR SWS 8 & 10         89F06530
00B3 0 E019                AND     ACC05      LEAVE BITS 8 & 10.          89F06540
00B4 0 1804                SRA     FOUR       SHIFT TO POSITION 12 & 14.  89F06550
00B5 0 D018                STO     ACC10      SET WORD AND SAVE FLAGS.    89F06560
00B6 0 1803                SRA     THREE      IF EXTERNAL INDICATOR       89F06570
00B7 0 4804                SKP     E          ON BRANCH AROUND TEST       89F06580
00B8 0 7006                B       AC020      FOR EXPLICIT BSM.           89F06590
00B9 0 C3F9                LD     3 AAC10-BASE TEST FOR EXPLICIT BSM.      89F06600
00BA 0 4808                SKP     +          SKIP IF SET.                89F06610
00BB 0 7003                B       AC020      BRANCH NO EXPLICIT TEST.    89F06620
00BC 0 C011                LD      ACC10      SET INDICATOR ON            89F06630
00BD 0 E811                OR      ACC15      IN FLAG WORD.               89F06640
00BE 0 D00F                STO     ACC10      BIT 13.                     89F06650
00BF 0               AC020 EQU    *                                       89F06660
00BF 0 C301                LD     3 ONE       PUT HILOW BSM INDICATOR     89F06670
00C0 0 1804                SRA     FOUR       INTO BIT 0 OF Q AND SHIFT   89F06680
00C1 0 1889                SRT     NINE       BSM ADDRESS TO BITS 13-15.  89F06690
00C2 0 800D                A       ACC20      COMPUTE BSM OF RESIDENCE.   89F06700
00C3 0 F3F5                EOR    3 AAC04-BASE  IS TEST RESIDENT IN        89F06710
00C4 0 4820                SKP     Z          LAST BSM.  SKIP IF SO.      89F06720
00C5 0 7003                B       AC040      BRANCH IF NOT.              89F06730
00C6 0 C007                LD      ACC10      SET FLAG.                   89F06740
00C7 0 E808                OR      ACC20      BIT 15.                     89F06750
00C8 0 7001                B       AC050      SKIP.                       89F06760
00C9 0               AC040 EQU    *                                       89F06770
00C9 0 C004                LD      ACC10      LOAD FLAG WORD.             89F06780
00CA 0               AC050 EQU    *                                       89F06790
00CA 0 1881                SRT     ONE        POSITION FLAG WORD.         89F06800
00CB 0 4F80 004C           B     I3 AC010-BASE  RETURN.                   89F06810
```

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                                ************************************************** 89F06820
                                *                                                * 89F06830
                                * CONSTANTS AND WORK AREAS                       * 89F06840
                                *                                                * 89F06850
                                ************************************************** 89F06860
                                *                                                * 89F06870
00CD 0 00A0                     ACC05 DC      /00A0      MASK TO LEAVE BITS 8 & 10. 89F06880
00CE   0001                     ACC10 BSS     1          FLAG WORD STORAGE.         89F06890
00CF 0 0004                     ACC15 DC      /0004      BIT 13.                    89F06900
00D0 0 0001                     ACC20 DC      /0001      BIT 15 AND CONSTANT ONE.   89F06910
00D1 0 1000                     ACC22 DC      /1000      BIT 3, 4K ADDRESS BIT.     89F06920
00D2   0001                     ACC24 BSS     1          END ADDRESS LIMIT.         89F06930
00D3   0001                     ACC26 BSS     1          START ADDRESS, LOAD LIMIT. 89F06940
                                *                                                * 89F06950
                                ************************************************** 89F06960
                                ************************************************** 89F06970
                                *                                                * 89F06980
                                * CORE BEAT PATTERN TEST                         * 89F06990
                                *                                                * 89F07000
                                ************************************************** 89F07010
                                *                                                * 89F07020
                                * THE CORE BEAT PATTERN TEST FILLS A BSM WITH THE * 89F07030
                                * WORST CASE PATTERN TEST AND THEN BEATS EACH     * 89F07040
                                * SPECIFIED LOCATION WITH A PATTERN SPECIFIED BY  * 89F07050
                                * THE OPERATOR, FOR ABOUT TWO SECONDS.           * 89F07060
                                *                                                * 89F07070
                                *                                    5/2/69      * 89F07080
                                *                                                * 89F07090
                                ************************************************** 89F07100
                                *                                                * 89F07110
00D4 0                          BB010 EQU     *          ENTER PATTERN TEST.        89F07120
00D4 0 6201                           LDX   2 ONE        XR2 INDICATES ROUTINE ID.  89F07130
00D5 0 4336                           BSI   3 AB010-BASE GO TO WAIT TEST            89F07140
                                *                                                   89F07150
                                * SET ADDRESS LIMIT.                                89F07160
                                *                                                   89F07170
00D6 0 4700 092C                      BSI  L3 SA100-BASE  SET ADDRESS LIMITS.     89F07180
00D8 0 E8F8                           OR      ACC22       MAKE SURE END ADDRESS   89F07190
00D9 0 D0F8                           STO     ACC24       LIMIT IS ON 8K BOUNDARY. 89F07200
00DA 0 69F8                           STX   1 ACC26       SAVE START ADDRESS LIMIT. 89F07210
                                *                                                   89F07220
                                * GET CORE BEAT PATTERN FROM OPERATOR.              89F07230
                                *                                                   89F07240
00DB 0 4700 06DA                      BSI  L3 MA010-BASE  SPACE ONE LINE.         89F07250
00DD 0 F000                           DC      /F000       SPACE FUNCTION.         89F07260
00DE 0 4700 06DA                      BSI  L3 MA010-BASE  WRITE ENTRY MESSAGE.    89F07270
00E0 0 0C88                           DC      MSG11-BASE  MESSAGE.                89F07280
00E1 0 4700 06DA                      BSI  L3 MA010-BASE  WRITE SECOND LINE.      89F07290
00E3 0 0C97                           DC      MSG12-BASE  SECOND LINE.            89F07300
                                *                                                   89F07310
00E4 0 3020                     WAT20 WAIT    /20        WAIT FOR DES ENTRY.        89F07320
                                *                                                   89F07330
00E5 0 0BF7                           XIO   3 AAC06-BASE  READ STOR PROT SW       89F07340
00E6 0 4810                           SKP     -           SKIP IF ON.             89F07350
00E7 0 7003                           B       BB020       BRANCH IF OFF.          89F07360
00E8 0 1810                           SRA     16          SET STORAGE PROTECT SWITCH 89F07370
00E9 0 D700 04F1                      STO  L3 IXC14-BASE  IN INTERRUPT SUBROUTINE. 89F07380
00EB 0                          BB020 EQU     *                                     89F07390
00EB 0 0B2D                           XIO   3 AAC50-BASE  READ PATTERN            89F07400
00EC 0 D067                           STO     BBC02       SAVE PATTERN FOR TEST.  89F07410
00ED 0 D700 04F0                      STO  L3 IXC12-BASE  STORE PATTERN IN INTRPT. 89F07420
00EF 0 C3F9                           LD    3 AAC10-BASE  IF EXPLICIT OR EXTERNAL 89F07430
00F0 0 4818                           SKP     +-          GET ADDRESS LIMITS.     89F07440
00F1 0 7020                           B       BB060       BRANCH FULL TEST.       89F07450
00F2 0                          BB030 EQU     *                                     89F07460
00F2 0 4700 06D2                      BSI  L3 MA001-BASE  SPACE ONE LINE.         89F07470
00F4 0 F000                           DC      /F000       SPACE FUNCTION.         89F07480
00F5 0 4700 06D2                      BSI  L3 MA001-BASE  WRITE ENTRY MESSAGE.    89F07490
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00F7 0 0CA9                           DC      MSG13-BASE  MESSAGE.                89F07500
                                *                                                   89F07510
00F8 0 3021                     WAT21 WAIT    /21        WAIT FOR DES ENTRY.        89F07520
                                *                                                   89F07530
00F9 0 0B2D                           XIO   3 AAC50-BASE  READ START ADDRS         89F07540
00FA 0 D05B                           STO     BBC08       SAVE.                   89F07550
00FB 0 90D7                           S       ACC26       IS IT GT OR EQUAL TO START 89F07560
00FC 0 4828                           SKP     +Z          LIMIT, SKIP IF SO.      89F07570
00FD 0 706F                           B       BB180       BRANCH ON ERROR.        89F07580
00FE 0 C0D3                           LD      ACC24       IS IT LT OR EQUAL TO END 89F07590
00FF 0 9056                           S       BBC08       LIMIT.                  89F07600
0100 0 4828                           SKP     +Z          SKIP IF SO.             89F07610
0101 0 706B                           B       BB180       BRANCH ON ERROR.        89F07620
0102 0                          BB040 EQU     *                                   89F07630
0102 0 4700 06D2                      BSI  L3 MA001-BASE  SPACE ONE LINE.         89F07640
0104 0 F000                           DC      /F000       SPACE FUNCTION.         89F07650
0105 0 4700 06D2                      BSI  L3 MA001-BASE  WRITE ENTRY MESSAGE.    89F07660
0107 0 0CBB                           DC      MSG14-BASE  MESSAGE.                89F07670
                                *                                                   89F07680
0108 0 3022                     WAT22 WAIT    /22        WAIT FOR DES ENTRY.        89F07690
                                *                                                   89F07700
0109 0 0B2D                           XIO   3 AAC50-BASE  READ END ADDRS           89F07710
010A 0 D04C                           STO     BBC10       SAVE.                   89F07720
010B 0 904A                           S       BBC08       IS IT GT OR EQUAL TO START 89F07730
010C 0 4828                           SKP     +Z          ADDR., SKIP IF SO.      89F07740
010D 0 7067                           B       BB190       BRANCH ON ERROR.        89F07750
010E 0 C0C3                           LD      ACC24       IS IT LT OR EQUAL TO END 89F07760
010F 0 9047                           S       BBC10       LIMIT.                  89F07770
0110 0 4828                           SKP     +Z          SKIP IF SO.             89F07780
0111 0 7063                           B       BB190       BRANCH ON ERROR.        89F07790
0112 0                          BB060 EQU     *                                   89F07800
0112 0 4700 06D2                      BSI  L3 MA001-BASE  SPACE ONE LINE.         89F07810
0114 0 F000                           DC      /F000       SPACE FUNCTION.         89F07820
0115 0 4700 06D2                      BSI  L3 MA001-BASE  WRITE RESET MESSAGE.    89F07830
0117 0 0CCC                           DC      MSG15-BASE  MESSAGE.                89F07840
                                *                                                   89F07850
0118 0 3023                     WAT23 WAIT    /23        WAIT.                      89F07860
                                *                                                   89F07870
0119 0                          BB070 EQU     *                                   89F07880
0119 0 0B2D                           XIO   3 AAC50-BASE  CK FOR EXPLICIT TEST    89F07890
011A 0 E041                           AND     BBC24       GET EXTERNAL SWITCH AND 89F07900
011B 0 1807                           SRA     SEVEN       CORE BLOCK.             89F07910
011C 0 4804                           SKP     E                                   89F07920
011D 0 702B                           B       BB140       BRANCH IF EXTERNAL.     89F07930
011E 0 1801                           SRA     ONE                                 89F07940
011F 0 4820                           SKP     Z           SKIP NOT EXPLICIT.      89F07950
0120 0 7007                           B       BB090       BRANCH IF EXPLICIT TEST. 89F07960
0121 0                          BB080 EQU     *                                   89F07970
0121 0 4700 0BFE                      BSI  L3 TC010-BASE  LOAD WORST CASE PATTERN. 89F07980
0123 0 4700 092C                      BSI  L3 SA100-BASE  SET ADDRESS LIMITS.     89F07990
0125 0 D031                           STO     BBC10       SAVE END TEST ADDRESS.  89F08000
0126 0 D02E                           STO     BBC06       SAVE END LOAD ADDRESS.  89F08010
0127 0 7028                           B       BB147       BRANCH TO BEAT TEST.    89F08020
                                *                                                   89F08030
                                * EXPLICIT CORE TEST.                               89F08040
                                *                                                   89F08050
0128 0                          BB090 EQU     *                                   89F08060
0128 0 C02D                           LD      BBC08       PUT STARTING ADDRESS    89F08070
0129 0 D008                           STO     BB110+1     IN XR1.                 89F08080
012A 0 F301                           EOR   3 ONE         MAKE SURE STARTING      89F08090
012B 0 1003                           SLA     THREE       ADDRESS IN OTHER 4K.    89F08100
012C 0 4810                           SKP     -           SKIP IF IT IS.          89F08110
012D 0 7006                           B       BB120       BRANCH TO OSCILLATE.    89F08120
012E 0                          BB100 EQU     *                                   89F08130
012E 0 4700 0BFE                      BSI  L3 TC010-BASE  LOAD WORST CASE PATTERN. 89F08140
0130 0 D024                           STO     BBC06       SAVE END ADDRESS.       89F08150
0131 0 6500 0000                BB110 LDX  L1 *-*         PUT START ADDR. IN XR1. 89F08160
0133 0 701C                           B       BB147       BRANCH TO BEAT TEST.    89F08170
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0134 0                  BB120 EQU     *                                        89F08180
0134 0 4700 07F3              BSI   L3 NE200-BASE  OSCILLATE AND RE-ENTER    89F08190
0136 0 00C9                   DC      BB100-BASE   AT BB100.                 89F08200
                        *                                                    89F08210
                        * LOOP AND EXPLICIT TEST.                           89F08220
                        *                                                    89F08230
0137 0                  BB130 EQU     *                                      89F08240
0137 0 C01E                   LD      BBC08        START AND END             89F08250
0138 0 F01E                   EOR     BBC10        ADDRESS IN SAME 4K.       89F08260
0139 0 180C                   SRA     12                                     89F08270
013A 0 4818                   SKP     +-           SKIP IF NOT.              89F08280
013B 0 70F5                   B       BB110        BRANCH TO BEAT AGAIN.     89F08290
013C 0 4700 07F3              BSI   L3 NE200-BASE  OSCILLATE.               89F08300
013E 0 00DA                   DC      *-BASE       RE-ENTER AT NEXT INSTR.   89F08310
013F 0 C301                   LD    3 ONE          IS PROGRAM IN LOW         89F08320
0140 0 1003                   SLA     THREE        4K.                       89F08330
0141 0 4828                   SKP     +Z           SKIP IF SO.               89F08340
0142 0 70EB                   B       BB100        BRANCH IF NOT.            89F08350
                        *                                                    89F08360
                        * EXPLICIT TEST ON HIGH 4K.                         89F08370
                        *                                                    89F08380
0143 0                  BB134 EQU     *                                      89F08390
0143 0 4700 0BFE              BSI   L3 TC010-BASE  LOAD WORST CASE PATTERN.  89F08400
0145 0 4700 092C              BSI   L3 SA100-BASE  SET STARTING ADDRESS.     89F08410
0147 0 D00D                   STO     BBC06        SAVE END LOAD ADDRESS.    89F08420
0148 0 7007                   B       BB147        BRANCH TO BEAT TEST.      89F08430
                        *                                                    89F08440
                        * EXTERNAL TEST.                                     89F08450
                        *                                                    89F08460
0149 0                  BB140 EQU     *                                      89F08470
0149 0 4700 0BFE              BSI   L3 TC010-BASE  LOAD WORST CASE PATTERN.  89F08480
014B 0 D009                   STO     BBC06        SAVE END ADDRESS.         89F08490
014C 0 C009                   LD      BBC08        PUT STARTING              89F08500
014D 0 D001                   STO     BB146+1      ADDRESS IN                89F08510
014E 0 6500 0000        BB146 LDX   L1 *-*         XR1.                      89F08520
0150 0                  BB147 EQU     *                                      89F08530
0150 0 C00C                   LD      BBC26        INCREMENT PASS            89F08540
0151 0 4700 08C0              BSI   L3 PS010-BASE  COUNTER.                  89F08550
0153 0 703D                   B       BB210        BRANCH TO BEAT TEST.      89F08560
                        ********************************************************89F08570
                        *                                                      *89F08580
                        * CONSTANTS AND WORK AREAS                             *89F08590
                        *                                                      *89F08600
                        ********************************************************89F08610
                        *                                                      *89F08620
0154   0001             BBC02 BSS     1            PATTERN FOR TEST.         89F08630
0155   0001             BBC06 BSS     1            END ADDRESS.   LOAD       89F08640
0156   0001             BBC08 BSS     1            START ADDRESS, TEST.      89F08650
0157   0001             BBC10 BSS     1            END ADDRESS, TEST.        89F08660
0158   0001             BBC14 BSS     1            WORK AREA.                89F08670
0159   0001             BBC18 BSS     1            SAVE AREA.                89F08680
015A 0 09C5             BBC20 DC      2501         LOOP COUNT FOR 2500 PASSES89F08690
015B 0 0001             BBC22 DC      1            ONE.                      89F08700
015C 0 0F80             BBC24 DC      /0F80        CORE BLOCK, EXTERNAL SW.  89F08710
015D 0 0F75             BBC26 DC      PXK60-BASE   LOOP TALLEY TABLE ADDRESS 89F08720
015E 0 00FA             BBC28 DC      BBC30-BASE   FLAG TABLE BASE ADDRESS.  89F08730
015F 0 0207             BBC30 DC      BB300-BASE   FULL, NORMAL TEST.        89F08740
0160 0 020B                   DC      BB400-BASE   LOOP ON ROUTINE.          89F08750
0161 0 020E                   DC      BB500-BASE   EXPLICIT BSM TEST.        89F08760
0162 0 00D2                   DC      BB130-BASE   LOOP AND EXPLICIT.        89F08770
0163 0 0217                   DC      BB600-BASE   EXTERNAL BSM TEST.        89F08780
0164 0 00E9                   DC      BB146-BASE   LOOP AND EXTERNAL.        89F08790
                        *                                                    * 89F08800
                        ********************************************************89F08810
                        *                                                      89F08820
                        * BEAT TEST DONE.                                     89F08830
                        *                                                      89F08840
0165 0                  BB150 EQU     *                                      89F08850
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0165 0 434C                   BSI     3 AC010-BASE SET STATUS FLAG WORD     89F08860
                        *                                                    89F08870
                        * UPON RETURN THERE IS A VALUE OF 0 - 5 IN THE ACC. 89F08880
                        *                                                    89F08890
0166 0 80F7                   A       BBC28        COMPUTE TABLE ADDRESS AND 89F08900
0167 0 D001                   STO     BB160+1      STORE IN LOAD OPERAND.    89F08910
0168 0 C700 0000        BB160 LD    L3 *-*         GET TABLE ENTRY AND       89F08920
016A 0 D001                   STO     BB170+1      BUILD BRANCH TO           89F08930
016B 0 4F00 0000        BB170 B     L3 *-*         ROUTINE ENTRY.            89F08940
                        *                                                    89F08950
                        * DES ENTRY ERROR SUBROUTINES.                       89F08960
                        *                                                    89F08970
016D 0                  BB180 EQU     *                                      89F08980
016D 0 4700 06D2              BSI   L3 MA001-BASE  SPACE ONE LINE.           89F08990
016F 0 F000                   DC      /F000        SPACE FUNCTION.           89F09000
0170 0 4700 06D2              BSI   L3 MA001-BASE  WRITE ERROR MESSAGE.      89F09010
0172 0 0CD9                   DC      MSG16-BASE   MESSAGE.                  89F09020
0173 0 4F00 008D              B     L3 BB030-BASE  GET DES. AGAIN.           89F09030
0175 0                  BB190 EQU     *                                      89F09040
0175 0 4700 06D2              BSI   L3 MA001-BASE  SPACE ONE LINE.           89F09050
0177 0 F000                   DC      /F000        SPACE FUNCTION.           89F09060
0178 0 4700 06D2              BSI   L3 MA001-BASE  WRITE ERROR MESSAGE.      89F09070
017A 0 0CD9                   DC      MSG16-BASE   MESSAGE.                  89F09080
017B 0 4F00 009D              B     L3 BB040-BASE  GET DES. AGAIN.           89F09090
017D 0                  BB200 EQU     *                                      89F09100
017D 0 C100                   LD    1 ZERO         BE SURE WORD IN CORE IS   89F09110
017E 0 F0D5                   EOR     BBC02        STILL THE SAME AS THE     89F09120
017F 0 4818                   SKP     +-           TEST WORD.                89F09130
0180 0 7002                   B       BB205        BRANCH TO CONTINUE IF SO. 89F09140
0181 0 4700 0614              BSI   L3 JA010-BASE  LOG ERROR.                89F09150
0183 0                  BB205 EQU     *                                      89F09160
0183 0 2D40 0000              STS   L1 ZERO,/40    RESET STORAGE PROTECT BIT.89F09170
0185 0 C0D3                   LD      BBC18        RESTORE WORST             89F09180
0186 0 D100                   STO   1 ZERO         CASE PATTERN.             89F09190
0187 0 69D0                   STX   1 BBC14        CHECK FOR END ADDRESS     89F09200
0188 0 C0CF                   LD      BBC14        OF TEST.                  89F09210
0189 0 F0CD                   EOR     BBC10                                  89F09220
018A 0 4818                   SKP     +-           SKIP NOT DONE.            89F09230
018B 0 70D9                   B       BB150        BRANCH IF DONE.           89F09240
018C 0 C0CB                   LD      BBC14        END OF CORE               89F09250
018D 0 F0C7                   EOR     BBC06        BLOCK.                    89F09260
018E 0 4818                   SKP     +-           SKIP NOT DONE.            89F09270
018F 0 70D5                   B       BB150        BRANCH IF DONE.           89F09280
0190 0 7101                   MDX   1 ONE          INCREMENT ADDRESS REGISTER89F09290
0191 0                  BB210 EQU     *                                      89F09300
0191 0 C100                   LD    1 ZERO         SAVE WORST CASE PATTERN   89F09310
0192 0 D0C6                   STO     BBC18        FOR BEAT TEST.            89F09320
0193 0 C0C0                   LD      BBC02        PUT TEST WORD IN CORE     89F09330
0194 0 D100                   STO   1 ZERO         LOCATION TO BEAT.         89F09340
0195 0 C700 04F1              LD    L3 IXC14-BASE  IF STORAGE PROTECT SWITCH 89F09350
0197 0 4820                   SKP     Z            IS ON, SET STORAGE PROTECT89F09360
0198 0 7002                   B       BB220        BIT ON IN TEST WORD.      89F09370
0199 0 2D41 0000              STS   L1 ZERO,/41                              89F09380
019B 0                  BB220 EQU     *                                      89F09390
019B 0 C0BE                   LD      BBC20        INITIALIZE LOOP COUNTER   89F09400
019C 0 D0BB                   STO     BBC14        IN WORK AREA.             89F09410
019D 0                  BB230 EQU     *                                      89F09420
019D 0 C0BA                   LD      BBC14        DECREMENT BEAT LOOP       89F09430
019E 0 90BC                   S       BBC22        COUNTER.                  89F09440
019F 0 D0B8                   STO     BBC14                                  89F09450
01A0 0 4818                   SKP     +-           SKIP NOT DONE.            89F09460
01A1 0 70DB                   B       BB200        BRANCH IF BEAT DONE.      89F09470
01A2 0 C100                   LD    1 ZERO         EXECUTE ABOUT 500,000 LOAD89F09480
01A3 0 C100                   LD    1 ZERO         INSTRUCTIONS.             89F09490
01A4 0 C100                   LD    1 ZERO                                   89F09500
01A5 0 C100                   LD    1 ZERO                                   89F09510
01A6 0 C100                   LD    1 ZERO                                   89F09520
01A7 0 C100                   LD    1 ZERO                                   89F09530
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01A8 0 C100	LD	1 ZERO	89F09540
01A9 0 C100	LD	1 ZERO	89F09550
01AA 0 C100	LD	1 ZERO	89F09560
01AB 0 C100	LD	1 ZERO	89F09570
01AC 0 C100	LD	1 ZERO	89F09580
01AD 0 C100	LD	1 ZERO	89F09590
01AE 0 C100	LD	1 ZERO	89F09600
01AF 0 C100	LD	1 ZERO	89F09610
01B0 0 C100	LD	1 ZERO	89F09620
01B1 0 C100	LD	1 ZERO	89F09630
01B2 0 C100	LD	1 ZERO	89F09640
01B3 0 C100	LD	1 ZERO	89F09650
01B4 0 C100	LD	1 ZERO	89F09660
01B5 0 C100	LD	1 ZERO	89F09670
01B6 0 C100	LD	1 ZERO	89F09680
01B7 0 C100	LD	1 ZERO	89F09690
01B8 0 C100	LD	1 ZERO	89F09700
01B9 0 C100	LD	1 ZERO	89F09710
01BA 0 C100	LD	1 ZERO	89F09720
01BB 0 C100	LD	1 ZERO	89F09730
01BC 0 C100	LD	1 ZERO	89F09740
01BD 0 C100	LD	1 ZERO	89F09750
01BE 0 C100	LD	1 ZERO	89F09760
01BF 0 C100	LD	1 ZERO	89F09770
01C0 0 C100	LD	1 ZERO	89F09780
01C1 0 C100	LD	1 ZERO	89F09790
01C2 0 C100	LD	1 ZERO	89F09800
01C3 0 C100	LD	1 ZERO	89F09810
01C4 0 C100	LD	1 ZERO	89F09820
01C5 0 C100	LD	1 ZERO	89F09830
01C6 0 C100	LD	1 ZERO	89F09840
01C7 0 C100	LD	1 ZERO	89F09850
01C8 0 C100	LD	1 ZERO	89F09860
01C9 0 C100	LD	1 ZERO	89F09870
01CA 0 C100	LD	1 ZERO	89F09880
01CB 0 C100	LD	1 ZERO	89F09890
01CC 0 C100	LD	1 ZERO	89F09900
01CD 0 C100	LD	1 ZERO	89F09910
01CE 0 C100	LD	1 ZERO	89F09920
01CF 0 C100	LD	1 ZERO	89F09930
01D0 0 C100	LD	1 ZERO	89F09940
01D1 0 C100	LD	1 ZERO	89F09950
01D2 0 C100	LD	1 ZERO	89F09960
01D3 0 C100	LD	1 ZERO	89F09970
01D4 0 C100	LD	1 ZERO	89F09980
01D5 0 C100	LD	1 ZERO	89F09990
01D6 0 C100	LD	1 ZERO	89F10000
01D7 0 C100	LD	1 ZERO	89F10010
01D8 0 C100	LD	1 ZERO	89F10020
01D9 0 C100	LD	1 ZERO	89F10030
01DA 0 C100	LD	1 ZERO	89F10040
01DB 0 C100	LD	1 ZERO	89F10050
01DC 0 C100	LD	1 ZERO	89F10060
01DD 0 C100	LD	1 ZERO	89F10070
01DE 0 C100	LD	1 ZERO	89F10080
01DF 0 C100	LD	1 ZERO	89F10090
01E0 0 C100	LD	1 ZERO	89F10100
01E1 0 C100	LD	1 ZERO	89F10110
01E2 0 C100	LD	1 ZERO	89F10120
01E3 0 C100	LD	1 ZERO	89F10130
01E4 0 C100	LD	1 ZERO	89F10140
01E5 0 C100	LD	1 ZERO	89F10150
01E6 0 C100	LD	1 ZERO	89F10160
01E7 0 C100	LD	1 ZERO	89F10170
01E8 0 C100	LD	1 ZERO	89F10180
01E9 0 C100	LD	1 ZERO	89F10190
01EA 0 C100	LD	1 ZERO	89F10200
01EB 0 C100	LD	1 ZERO	89F10210

01EC 0 C100	LD	1 ZERO	89F10220
01ED 0 C100	LD	1 ZERO	89F10230
01EE 0 C100	LD	1 ZERO	89F10240
01EF 0 C100	LD	1 ZERO	89F10250
01F0 0 C100	LD	1 ZERO	89F10260
01F1 0 C100	LD	1 ZERO	89F10270
01F2 0 C100	LD	1 ZERO	89F10280
01F3 0 C100	LD	1 ZERO	89F10290
01F4 0 C100	LD	1 ZERO	89F10300
01F5 0 C100	LD	1 ZERO	89F10310
01F6 0 C100	LD	1 ZERO	89F10320
01F7 0 C100	LD	1 ZERO	89F10330
01F8 0 C100	LD	1 ZERO	89F10340
01F9 0 C100	LD	1 ZERO	89F10350
01FA 0 C100	LD	1 ZERO	89F10360
01FB 0 C100	LD	1 ZERO	89F10370
01FC 0 C100	LD	1 ZERO	89F10380
01FD 0 C100	LD	1 ZERO	89F10390
01FE 0 C100	LD	1 ZERO	89F10400
01FF 0 C100	LD	1 ZERO	89F10410
0200 0 C100	LD	1 ZERO	89F10420
0201 0 C100	LD	1 ZERO	89F10430
0202 0 C100	LD	1 ZERO	89F10440
0203 0 C100	LD	1 ZERO	89F10450
0204 0 C100	LD	1 ZERO	89F10460
0205 0 C100	LD	1 ZERO	89F10470
0206 0 C100	LD	1 ZERO	89F10480
0207 0 C100	LD	1 ZERO	89F10490
0208 0 C100	LD	1 ZERO	89F10500
0209 0 C100	LD	1 ZERO	89F10510
020A 0 C100	LD	1 ZERO	89F10520
020B 0 C100	LD	1 ZERO	89F10530
020C 0 C100	LD	1 ZERO	89F10540
020D 0 C100	LD	1 ZERO	89F10550
020E 0 C100	LD	1 ZERO	89F10560
020F 0 C100	LD	1 ZERO	89F10570
0210 0 C100	LD	1 ZERO	89F10580
0211 0 C100	LD	1 ZERO	89F10590
0212 0 C100	LD	1 ZERO	89F10600
0213 0 C100	LD	1 ZERO	89F10610
0214 0 C100	LD	1 ZERO	89F10620
0215 0 C100	LD	1 ZERO	89F10630
0216 0 C100	LD	1 ZERO	89F10640
0217 0 C100	LD	1 ZERO	89F10650
0218 0 C100	LD	1 ZERO	89F10660
0219 0 C100	LD	1 ZERO	89F10670
021A 0 C100	LD	1 ZERO	89F10680
021B 0 C100	LD	1 ZERO	89F10690
021C 0 C100	LD	1 ZERO	89F10700
021D 0 C100	LD	1 ZERO	89F10710
021E 0 C100	LD	1 ZERO	89F10720
021F 0 C100	LD	1 ZERO	89F10730
0220 0 C100	LD	1 ZERO	89F10740
0221 0 C100	LD	1 ZERO	89F10750
0222 0 C100	LD	1 ZERO	89F10760
0223 0 C100	LD	1 ZERO	89F10770
0224 0 C100	LD	1 ZERO	89F10780
0225 0 C100	LD	1 ZERO	89F10790
0226 0 C100	LD	1 ZERO	89F10800
0227 0 C100	LD	1 ZERO	89F10810
0228 0 C100	LD	1 ZERO	89F10820
0229 0 C100	LD	1 ZERO	89F10830
022A 0 C100	LD	1 ZERO	89F10840
022B 0 C100	LD	1 ZERO	89F10850
022C 0 C100	LD	1 ZERO	89F10860
022D 0 C100	LD	1 ZERO	89F10870
022E 0 C100	LD	1 ZERO	89F10880
022F 0 C100	LD	1 ZERO	89F10890

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0230 0 C100              LD    1 ZERO                                    89F10900
0231 0 C100              LD    1 ZERO                                    89F10910
0232 0 C100              LD    1 ZERO                                    89F10920
0233 0 C100              LD    1 ZERO                                    89F10930
0234 0 C100              LD    1 ZERO                                    89F10940
0235 0 C100              LD    1 ZERO                                    89F10950
0236 0 C100              LD    1 ZERO                                    89F10960
0237 0 C100              LD    1 ZERO                                    89F10970
0238 0 C100              LD    1 ZERO                                    89F10980
0239 0 C100              LD    1 ZERO                                    89F10990
023A 0 C100              LD    1 ZERO                                    89F11000
023B 0 C100              LD    1 ZERO                                    89F11010
023C 0 C100              LD    1 ZERO                                    89F11020
023D 0 C100              LD    1 ZERO                                    89F11030
023E 0 C100              LD    1 ZERO                                    89F11040
023F 0 C100              LD    1 ZERO                                    89F11050
0240 0 C100              LD    1 ZERO                                    89F11060
0241 0 C100              LD    1 ZERO                                    89F11070
0242 0 C100              LD    1 ZERO                                    89F11080
0243 0 C100              LD    1 ZERO                                    89F11090
0244 0 C100              LD    1 ZERO                                    89F11100
0245 0 C100              LD    1 ZERO                                    89F11110
0246 0 C100              LD    1 ZERO                                    89F11120
0247 0 C100              LD    1 ZERO                                    89F11130
0248 0 C100              LD    1 ZERO                                    89F11140
0249 0 C100              LD    1 ZERO                                    89F11150
024A 0 C100              LD    1 ZERO                                    89F11160
024B 0 C100              LD    1 ZERO                                    89F11170
024C 0 C100              LD    1 ZERO                                    89F11180
024D 0 C100              LD    1 ZERO                                    89F11190
024E 0 C100              LD    1 ZERO                                    89F11200
024F 0 C100              LD    1 ZERO                                    89F11210
0250 0 C100              LD    1 ZERO                                    89F11220
0251 0 C100              LD    1 ZERO                                    89F11230
0252 0 C100              LD    1 ZERO                                    89F11240
0253 0 C100              LD    1 ZERO                                    89F11250
0254 0 C100              LD    1 ZERO                                    89F11260
0255 0 C100              LD    1 ZERO                                    89F11270
0256 0 C100              LD    1 ZERO                                    89F11280
0257 0 C100              LD    1 ZERO                                    89F11290
0258 0 C100              LD    1 ZERO                                    89F11300
0259 0 C100              LD    1 ZERO                                    89F11310
025A 0 C100              LD    1 ZERO                                    89F11320
025B 0 C100              LD    1 ZERO                                    89F11330
025C 0 C100              LD    1 ZERO                                    89F11340
025D 0 C100              LD    1 ZERO                                    89F11350
025E 0 C100              LD    1 ZERO                                    89F11360
025F 0 C100              LD    1 ZERO                                    89F11370
0260 0 C100              LD    1 ZERO                                    89F11380
0261 0 C100              LD    1 ZERO                                    89F11390
0262 0 C100              LD    1 ZERO                                    89F11400
0263 0 C100              LD    1 ZERO                                    89F11410
0264 0 C100              LD    1 ZERO                                    89F11420
0265 0 C100              LD    1 ZERO                                    89F11430
0266 0 C100              LD    1 ZERO                                    89F11440
0267 0 C100              LD    1 ZERO                                    89F11450
0268 0 C100              LD    1 ZERO                                    89F11460
0269 0 C100              LD    1 ZERO                                    89F11470
026A 0 4F00 0138         B     L3 BB230-BASE  LOOP ON BEAT STREAM.       89F11480
                         *                                               89F11490
                         * FULL NORMAL TEST.                             89F11500
                         *                                               89F11510
026C 0                   BB300 EQU     *                                 89F11520
026C 0 4700 07DC               BSI   L3 NE010-BASE  RELOCATE CORE TEST.  89F11530
026E 0 00BC                    DC       BB080-BASE  RE-ENTRY ADDRESS     89F11540
026F 0 0217                    DC       BB600-BASE  PARAMETERS.          89F11550
                         *                                               89F11560
                         * LOOP ON PATTERN TEST.                         89F11570
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                         *                                               89F11580
0270 0                   BB400 EQU     *                                 89F11590
0270 0 4700 07F7               BSI   L3 NE300-BASE  MOVE ANYWHERE.       89F11600
0272 0 00BC                    DC       BB080-BASE  RE-ENTER AT BB080.   89F11610
                         *                                               89F11620
                         * EXPLICIT BSM TEST.                            89F11630
                         *                                               89F11640
0273 0                   BB500 EQU     *                                 89F11650
0273 0 C700 00F2               LD    L3 BBC10-BASE  IS END ADDRASS IN HI 4K. 89F11660
0275 0 1003                    SLA      THREE                             89F11670
0276 0 4810                    SKP      -           SKIP IF SO.           89F11680
0277 0 7004                    B        BB600       BRANCH PROGRAM IN HIGH 4K. 89F11690
0278 0 4700 07FB               BSI   L3 NE400-BASE                        89F11700
027A 0 00DE                    DC       BB134-BASE  RE-ENTRY ADDRESS      89F11710
027B 0 0217                    DC       BB600-BASE  PARAMETERS.          89F11720
                         *                                               89F11730
                         * PATTERN TEST DONE.                            89F11740
                         *                                               89F11750
027C 0                   BB600 EQU     *                                 89F11760
027C 0 C000                    LD       *           RESET STORAGE PROTECT 89F11770
027D 0 D700 04F1               STO   L3 IXC14-BASE  SWITCH IN INTRPT. RTN. 89F11780
027F 0 C32F                    LD     3 AAC52-BASE  TEST FOR EXPLICIT RTN 89F11790
0280 0 4F20 03BF               BNZ   L3 HZ100-BASE                        89F11800
                         ********************************************** 89F11810
                         *                                            * 89F11820
                         * RANDOM DATA, MIXED OPERATIONS PATTERN TEST  * 89F11830
                         *                                            * 89F11840
                         ********************************************** 89F11850
                         *                                            * 89F11860
0282 0                   CC010 EQU     *           ENTER PATTERN TEST.   89F11870
0282 0 6202                    LDX      2 TWO       XR2 INDICATES ROUTINE ID. 89F11880
0283 0 4336                    BSI      3 AB010-BASE  GO TO WAIT TEST     89F11890
0284 0                   CC020 EQU     *                                 89F11900
0284 0 C03B                    LD       CCC10       INCREMENT PASS        89F11910
0285 0 4700 08C0               BSI   L3 PS010-BASE  COUNTER.              89F11920
0287 0 4057                    BSI      CD010       LOAD RANDOM DATA INTO CORE 89F11930
0288 0 0000                    DC       /0000       GENERATION PARAMETER. 89F11940
0289 0 4700 090F               BSI   L3 SA010-BASE  DETERMINE ADDRESS LIMITS. 89F11950
028B 0 DF00 0365               STD   L3 CEC04-BASE  SAVE, AND COMPUTE TOTAL 89F11960
028D 0 18D0                    XCH      1           NUMBER OF WORDS IN BLOCK 89F11970
028E 0 9700 0365               S     L3 CEC04-BASE  FOR INDEXING.          89F11980
0290 0 8023                    A        CCC01                             89F11990
0291 0 D700 0367               STO   L3 CEC08-BASE                        89F12000
0293 0 C02B                    LD       CCC08       LOAD LOOP COUNTER.    89F12010
0294 0 D029                    STO      CCC06                             89F12020
                         *                                               89F12030
                         * DISTRIBUTOR.                                  89F12040
                         *                                               89F12050
0295 0                   CC040 EQU     *                                 89F12060
0295 0 4039                    BSI      CD001       GENERATE A RANDOM NUMBER. 89F12070
0296 0 180D                    SRA      13          USE BITS 0-2.         89F12080
0297 0 801D                    A        CCC02                             89F12090
0298 0 D001                    STO      CC050+1                           89F12100
0299 0 C700 0000         CC050 LD    L3 *-*                              89F12110
029B 0 D001                    STO      CC060+1                           89F12120
029C 0 4F00 0000         CC060 B     L3 *-*       ENTER EXERCISE ROUTINE. 89F12130
                         *                                               89F12140
                         * RETURN HERE.                                  89F12150
                         *                                               89F12160
029E 0                   CC070 EQU     *                                 89F12170
029E 0 C01F                    LD       CCC06       DECREMENT LOOP        89F12180
029F 0 9014                    S        CCC01       COUNTER.              89F12190
02A0 0 D01D                    STO      CCC06                             89F12200
02A1 0 4820                    SKP      Z           SKIP WHEN ZERO.       89F12210
02A2 0 70F2                    B        CC040       LOOP.                 89F12220
                         *                                               89F12230
                         * EXERCISE DONE.                                89F12240
                         *                                               89F12250
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02A3 0 403B                BSI     CD010       CHECK RANDOM NUMBERS.        89F12260
02A4 0 0001                DC      /0001       CHECKING PARAMETER.          89F12270
02A5 0 434C                BSI   3 AC010-BASE  SET STATUS FLAG WORD         89F12280
                           *                                                89F12290
                           * UPON RETURN THERE IS A VALUE OF 0 - 5 IN THE ACC. 89F12300
                           *                                                89F12310
02A6 0 801A                A       CCC12       COMPUTE TABLE ADDRESS        89F12320
02A7 0 D001                STO     CC120+1     AND STORE IN LOAD OPERAND.   89F12330
02A8 0 C700 0000   CC120 LD    L3 *-*          GET TABLE ENTRY AND BRANCH   89F12340
02AA 0 D001                STO     CC130+1     TO ROUTINE                   89F12350
02AB 0 4F00 0000   CC130 B     L3 *-*          ENTRY.                       89F12360
                           *                                                89F12370
                           * FULL, NORMAL TEST.                             89F12380
                           *                                                89F12390
02AD 0             CC140 EQU     *                                          89F12400
02AD 0 4700 07DC           BSI   L3 NE010-BASE  RELOCATE CORE TEST.         89F12410
02AF 0 021F                DC      CC020-BASE  RE-ENTRY ADDRESS             89F12420
02B0 0 03BF                DC      CC520-BASE  PARAMETERS.                  89F12430
                           *                                                89F12440
                           * LOOP AND EXPLICIT.                             89F12450
                           *                                                89F12460
02B1 0             CC150 EQU     *                                          89F12470
02B1 0 4700 07F3           BSI   L3 NE200-BASE  OSCILLATE.                  89F12480
02B3 0 021F                DC      CC020-BASE  RE-ENTER AT CC020.           89F12490
                           ************************************************ 89F12500
                           *                                                * 89F12510
                           * CONSTANTS AND WORK AREAS                       * 89F12520
                           *                                                * 89F12530
                           ************************************************ 89F12540
                           *                                                * 89F12550
02B4 0 0001        CCC01 DC      1           ONE.                           89F12560
02B5 0 0251        CCC02 DC      CCC04-BASE  EXERCISE TABLE BASE.           89F12570
02B6 0 030E        CCC04 DC      CE010-BASE  RANDOM EXERCISE 0.             89F12580
02B7 0 0327                DC      CE110-BASE  RANDOM EXERCISE 1.           89F12590
02B8 0 0336                DC      CE210-BASE  RANDOM EXERCISE 2.           89F12600
02B9 0 034B                DC      CE310-BASE  RANDOM EXERCISE 3.           89F12610
02BA 0 036B                DC      CE410-BASE  RANDOM EXERCISE 4.           89F12620
02BB 0 0385                DC      CE510-BASE  RANDOM EXERCISE 5.           89F12630
02BC 0 03A8                DC      CE610-BASE  RANDOM EXERCISE 6.           89F12640
02BD 0 0239                DC      CC070-BASE  NO ROOM FOR EXERCISE 7.      89F12650
02BE   0001        CCC06 BSS     1           PASS COUNTER.                  89F12660
02BF 0 03E8        CCC08 DC      1000        NO. OF PASSES.                 89F12670
02C0 0 0F75        CCC10 DC      PXK60-BASE  LOOP TALLEY TABLE ADDRESS      89F12680
02C1 0 025D        CCC12 DC      CCC14-BASE  FLAG TABLE BASE ADDRESS.       89F12690
02C2 0 0248        CCC14 DC      CC140-BASE  FULL, NORMAL TEST.             89F12700
02C3 0 0263                DC      CC300-BASE  LOOP ON ROUTINE.             89F12710
02C4 0 0266                DC      CC400-BASE  EXPLICIT BSM TEST.           89F12720
02C5 0 024C                DC      CC150-BASE  LOOP AND EXPLICIT.           89F12730
02C6 0 03BF                DC      CC520-BASE  EXTERNAL BSM TEST.           89F12740
02C7 0 021F                DC      CC020-BASE  LOOP AND EXTERNAL.           89F12750
                           *                                              * 89F12760
                           ************************************************ 89F12770
                           *                                                89F12780
                           * LOOP ON PATTERN TEST.                          89F12790
                           *                                                89F12800
02C8 0             CC300 EQU     *                                          89F12810
02C8 0 4700 07F7           BSI   L3 NE300-BASE  MOVE ANYWHERE AND           89F12820
02CA 0 021F                DC      CC020-BASE  RE-ENTER AT CC020.           89F12830
                           *                                                89F12840
                           * EXPLICIT BSM TEST.                             89F12850
                           *                                                89F12860
02CB 0             CC400 EQU     *                                          89F12870
02CB 0 4700 07FB           BSI   L3 NE400-BASE                              89F12880
02CD 0 021F                DC      CC020-BASE  RE-ENTRY ADDRESS             89F12890
02CE 0 03BF                DC      CC520-BASE  PARAMETERS.                  89F12900
                           ************************************************ 89F12910
                           *                                              * 89F12920
                           * RANDOM NUMBER GENERATOR                      * 89F12930
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                           *                                              * 89F12940
                           ************************************************ 89F12950
                           *                                              * 89F12960
                           *                                                89F12970
02CF 0 0000        CD001 DC      *-*         ENTRY.                         89F12980
02D0 0 C06E                LD      CDC06       DEVELOP LOW ORDER            89F12990
02D1 0 A071                M       CDC10       PRODUCT OF NEW RANDOM        89F13000
02D2 0 D871                STD     CDC11       NUMBER.                      89F13010
02D3 0 C06A                LD      CDC04       DEVELOP PRODUCT OF           89F13020
02D4 0 A06E                M       CDC10       HIGH AND LOW TERMS           89F13030
02D5 0 18D0                XCH                 16 BITS TO NEW PRODUCT.      89F13040
02D6 0 806D                A       CDC11                                    89F13050
02D7 0 D06C                STO     CDC11                                    89F13060
02D8 0 C066                LD      CDC06                                    89F13070
02D9 0 A068                M       CDC08                                    89F13080
02DA 0 1090                SLT     16                                       89F13090
02DB 0 8868                AD      CDC11                                    89F13100
02DC 0 D861                STD     CDC04                                    89F13110
02DD 0 4F80 026A           B     I3 CD001-BASE  RETURN.                     89F13120
                           ************************************************ 89F13130
                           *                                              * 89F13140
                           * RANDOM DATA GENERATOR                        * 89F13150
                           *                                              * 89F13160
                           ************************************************ 89F13170
                           *                                                89F13180
                           * THIS SUBROUTINE GENERATES RANDOM NUMBERS AND   89F13190
                           * STORES THEM IN THE STORAGE BLOCK TO BE         89F13200
                           * EXERCISED.                                     89F13210
                           *                                                89F13220
                           * CALL -                                         89F13230
                           *                                                89F13240
                           *     BSI     CD010                              89F13250
                           *                                                89F13260
                           *     XR1 AND XR2 ARE NOT USED.                  89F13270
                           *                                                89F13280
                           *     XR3 IS THE PSEUDO BASE REGISTER.           89F13290
                           *                                                89F13300
                           *                                  6/3/69        89F13310
                           *                                                89F13320
                           ************************************************ 89F13330
                           *                                                89F13340
02DF 0 0000        CD010 DC      *-*         ENTRY.                         89F13350
02E0 0 C05B                LD      CDC01       IF NEVER ENTERED SUB-        89F13360
02E1 0 4820                SKP     Z           ROUTINE, GENERATE STARTING   89F13370
02E2 0 7010                B       CD040       VALUE FOR RANDOM NUMBER      89F13380
02E3 0 6858                STX   0 CDC01       GENERATOR.                   89F13390
02E4 0 C058                LD      CDC03                                    89F13400
02E5 0 D400 0006           STO   L SIX         STORE IN TIMER C.            89F13410
02E7 0 085E                XIO     CDC12       START TIMER C.               89F13420
02E8 0             CD030 EQU     *                                          89F13430
02E8 0 C056                LD      CDC06       INCREMENT RANDOM             89F13440
02E9 0 80CA                A       CCC01       NUMBER COUNTER AND           89F13450
02EA 0 D054                STO     CDC06       UPDATE.                      89F13460
02EB 0 085E                XIO     CDC16       TEST FOR TIMER               89F13470
02EC 0 1002                SLA     TWO         INTERRUPT.                   89F13480
02ED 0 4810                SKP     -           SKIP IF ON.                  89F13490
02EE 0 70F9                B       CD030       LOOP.                        89F13500
02EF 0 0858                XIO     CDC14       STOP TIMER C.                89F13510
02F0 0 C04E                LD      CDC06       MAKE SURE STARTING VALUE     89F13520
02F1 0 E8C2                OR      CCC01       IS ODD.                      89F13530
02F2 0 D04C                STO     CDC06                                    89F13540
02F3 0             CD040 EQU     *                                          89F13550
02F3 0 C780 027A           LD    I3 CD010-BASE  GET CALLING PARAMETER       89F13560
02F5 0 4820                SKP     Z           AND DETERMINE TASK.          89F13570
02F6 0 7007                B       CD042       BRANCH IF CHECKING.          89F13580
02F7 0 C05A                LD      CDC30       INITIALIZE STORE AND         89F13590
02F8 0 D01D                STO     CD064       SKIP INSTRUCTIONS THAT       89F13600
02F9 0 C05A                LD      CDC34       ARE PECULIAR TO THE          89F13610
02FA 0 D01D                STO     CD066       CALLED TASK.
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02FB 0 C842              LDD     CDC04     SAVE STARTING RANDOM        89F13620
02FC 0 D843              STD     CDC07     NUMBER FOR CHECKING.        89F13630
02FD 0 7006              B       CD043                                 89F13640
02FE 0                CD042 EQU     *                                   89F13650
02FE 0 C054              LD      CDC32     INITIALIZE EOR AND SKIP     89F13660
02FF 0 D016              STO     CD064     IF ZERO INSTRUCTIONS THAT   89F13670
0300 0 C054              LD      CDC36     ARE PECULIAR TO THE         89F13680
0301 0 D016              STO     CD066     CALLED TASK.                89F13690
0302 0 C83D              LDD     CDC07     RESTORE STARTING RANDOM     89F13700
0303 0 D83A              STD     CDC04     NUMBER FOR REGENERATION.    89F13710
0304 0                CD043 EQU     *                                   89F13720
0304 0 4700 090F         BSI   L3 SA010-BASE  GET ADDRESS LIMITS AND   89F13730
0306 0 9049              S       CDC26     SAVE START AND END LIMITS.  89F13740
0307 0 4820              SKP     Z         IF START ADDRESS IS TEN,    89F13750
0308 0 8047              A       CDC26     MAKE IT ZERO.               89F13760
0309 0 D842              STD     CDC18                                 89F13770
030A 0                CD045 EQU     *                                   89F13780
030A 0 D00C              STO     CD064+1   INITIALIZE ADDRESS OPERAND  89F13790
030B 0 C042              LD      CDC22     INITIALIZE LOOP             89F13800
030C 0 D042              STO     CDC24     COUNTER.                    89F13810
030D 0                CD050 EQU     *                                   89F13820
030D 0 6104              LDX   1 FOUR      QUAD COUNTER.               89F13830
030E 0 40C0              BSI     CD001     GENERATE A RANDOM NUMBER.   89F13840
030F 0 C007              LD      CD064+1   IF ADDRESS 0-9, IGNORE      89F13850
0310 0 4828              SKP     +Z        IT.                         89F13860
0311 0 7003              B       CD060     BRANCH IN HIGH 32K.         89F13870
0312 0 B03D              CMP     CDC26                                 89F13880
0313 0 4838              SKP     +-Z       SKIP NEXT INSTRUCTION.      89F13890
0314 0 7005              B       CD070     BRANCH 0-9.                 89F13900
0315 0                CD060 EQU     *                                   89F13910
0315 0 C028              LD      CDC04     PUT RANDOM NUMBER IN        89F13920
                         *                                             89F13930
                         * THE FOLLOWING INSTRUCTION IS A STORE LONG   89F13940
                         * DURING GENERATION AND AN EOR LONG DURING    89F13950
                         * CHECKING.                                   89F13960
                         *                                             89F13970
0316 0 D400 0000      CD064 STO   L *-*                                 89F13980
                         *                                             89F13990
                         * THE FOLLOWING INSTRUCTION IS A SKIP DURING  89F14000
                         * GENERATION AND A SKIP IF ZERO DURING CHECKING. 89F14010
                         *                                             89F14020
0318 0 4838           CD066 SKP     +-Z                                 89F14030
0319 0 704C              B       CD120     BRANCH ON ERROR.            89F14040
031A 0                CD070 EQU     *                                   89F14050
031A 0 71FF              MDX   1 -1        DECREMENT QUAD COUNTER.     89F14060
031B 0 700A              B       CD080     MAKE NEW ADDRESS, LOOP.     89F14070
031C 0 C032              LD      CDC24     DECREMENT WORD              89F14080
031D 0 9096              S       CCC01     COUNTER.                    89F14090
031E 0 4808              SKP     +         SKIP NOT DONE.              89F14100
031F 0 7036              B       CD090     BRANCH WHEN DONE.           89F14110
0320 0 D02E              STO     CDC24     UPDATE COUNTER.             89F14120
0321 0 C02A              LD      CDC18     INCREMENT ADDRESS           89F14130
0322 0 8091              A       CCC01     AND UPDATE.                 89F14140
0323 0 D028              STO     CDC18                                 89F14150
0324 0 D0F2              STO     CD064+1                               89F14160
0325 0 70E7              B       CD050     LOOP.                       89F14170
0326 0                CD080 EQU     *                                   89F14180
0326 0 C0F0              LD      CD064+1   MODIFY ADDRESS.              89F14190
0327 0 188C              SRT     12        DEVELOP FOUR ADDRESSES      89F14200
0328 0 D01B              STO     CDC11     LINES AND STORE RANDOM      89F14210
0329 0 1082              SLT     TWO       NUMBER.                     89F14220
032A 0 1001              SLA     ONE                                   89F14230
032B 0 1083              SLT     THREE                                 89F14240
032C 0 1001              SLA     ONE                                   89F14250
032D 0 1083              SLT     THREE                                 89F14260
032E 0 1001              SLA     ONE                                   89F14270
032F 0 1084              SLT     FOUR                                  89F14280
0330 0 8020              A       CDC28                                 89F14290
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0331 0 1884              SRT     FOUR                                  89F14300
0332 0 1801              SRA     ONE                                   89F14310
0333 0 1883              SRT     THREE                                 89F14320
0334 0 1801              SRA     ONE                                   89F14330
0335 0 1883              SRT     THREE                                 89F14340
0336 0 1801              SRA     ONE                                   89F14350
0337 0 1882              SRT     TWO                                   89F14360
0338 0 C00B              LD      CDC11                                 89F14370
0339 0 108C              SLT     12                                    89F14380
033A 0 D0DC              STO     CD064+1   UPDATE ADDRESS.             89F14390
033B 0 70D9              B       CD060     LOOP.                       89F14400
                         ********************************************* 89F14410
                         *                                           * 89F14420
                         * CONSTANTS AND WORK AREAS                  * 89F14430
                         *                                           * 89F14440
                         ********************************************* 89F14450
                         *                                           * 89F14460
033C 0 0000           CDC01 DC      0         SUBROUTINE ENTRY SWITCH.  89F14470
033D 0 FF05           CDC03 DC      /FF05     COUNT FOR TIMER, -251.    89F14480
033E   0001           CDC04 BSS   E 1         32 BIT RANDOM NUMBER.     89F14490
033F   0001           CDC06 BSS     1         USE 16 HIGH ORDER BITS.   89F14500
0340   0002           CDC07 BSS   E 2         STORAGE FOR RNG. START NO. 89F14510
0342 0 02E9           CDC08 DC      /02E9     5 TO THE 13TH POWER.      89F14520
0343 0 0EDD           CDC10 DC      /0EDD     MULTIPLICATIVE GENERATOR. 89F14530
0344   0002           CDC11 BSS   E 2         TEMPORARY STORAGE.        89F14540
0346 0 2000           CDC12 DC      /2000     IOCC TO START             89F14550
0347 0 0420                 DC      /0420     TIMER C.                  89F14560
0348 0 0000           CDC14 DC      /0000     IOCC TO STOP              89F14570
0349 0 0420                 DC      /0420     TIMER C.                  89F14580
034A   0001           CDC16 BSS     1         IOCC TO SENSE             89F14590
034B 0 0721                 DC      /0721     TIMER INTERRUPT.          89F14600
034C   0001           CDC18 BSS   E 1         START ADDRESS.            89F14610
034D   0001           CDC20 BSS     1         END ADDRESS.              89F14620
034E 0 0400           CDC22 DC      1024      FOUR 1K BLOCKS TO 4K.     89F14630
034F   0001           CDC24 BSS     1         COUNTER.                  89F14640
0350 0 000A           CDC26 DC      10        TEN.                      89F14650
0351 0 2444           CDC28 DC      /2444     BITS FOR QUAD ADDRESSES.  89F14660
0352 0 D400           CDC30 DC      /D400     STO  L  INSTRUCTION.      89F14670
0353 0 F400           CDC32 DC      /F400     EOR  L  INSTRUCTION.      89F14680
0354 0 4838           CDC34 SKP     +-Z       SKIP INSTRUCTION.         89F14690
0355 0 4820           CDC36 SKP     Z         SKIP IF ZERO INSTRUCTION. 89F14700
                         *                                           * 89F14710
                         ********************************************* 89F14720
                         *                                             89F14730
                         * 4K OF CORE FILLED.                          89F14740
                         *                                             89F14750
0356 0                CD090 EQU     *                                   89F14760
0356 0 C0F5              LD      CDC18     IF THIS IS AN EXTERNAL      89F14770
0357 0 F0F5              EOR     CDC20     TEST, FILL OTHER 4K.        89F14780
0358 0 180C              SRA     12                                    89F14790
0359 0 4818              SKP     +-                                    89F14800
035A 0 7005              B       CD100     BRANCH IF DONE.             89F14810
035B 0 C0F1              LD      CDC20     UPDATE START ADDRESS AND    89F14820
035C 0 180C              SRA     12        INDICATOR.                  89F14830
035D 0 100C              SLA     12                                    89F14840
035E 0 D0ED              STO     CDC18                                 89F14850
035F 0 70AA              B       CD045     FILL HI 4K.                 89F14860
                         *                                             89F14870
                         * DONE.                                       89F14880
                         *                                             89F14890
0360 0                CD100 EQU     *                                   89F14900
0360 0 C700 027A         LD    L3 CD010-BASE  INCREMENT EXIT ADDRESS   89F14910
0362 0 806A              A       CEC09     PAST CALL PARAMETER.        89F14920
0363 0 D001              STO     CD110+1                               89F14930
0364 0 4C00 0000      CD110 B     L *-*     EXIT WHEN DONE.             89F14940
                         *                                             89F14950
                         * ERROR DETECTED.                             89F14960
                         *                                             89F14970
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0366 0                CD120 EQU     *                                      89F14980
0366 0 690A                 STX   1 CD140+1     SAVE XR1.                89F14990
0367 0 C0E2                 LD      CDC16       PUT ADDRESS OF FAILURE   89F15000
0368 0 D001                 STO     CD130+1     IN XR1.                  89F15010
                                                                         89F15020
0369 0 6500 0000      CD130 LDX   L1 *-*                                   89F15030
036B 0 C0D2                 LD      CDC04       PUT KNOWN PATTERN IN     89F15040
036C 0 D700 04F0            STO   L3 IXC12-BASE  IXC12 FOR LOG.          89F15050
036E 0 4700 0614            BSI   L3 JA010-BASE  LOG ERROR.              89F15060
0370 0 6500 0000      CD140 LDX   L1 *-*         RESTORE XR1.             89F15070
0372 0 70A7                 B       CD070       RETURN TO CHECK.         89F15080
                      *                                                * 89F15090
                      ************************************************** 89F15100
                      *                                                * 89F15110
                      * RANDOM EXERCISE 0                              * 89F15120
                      *                                                * 89F15130
                      ************************************************** 89F15140
                      *                                                  89F15150
0373 0                CE010 EQU     *                                    89F15160
0373 0 C056                 LD      CEC04       COMPUTE STARTING         89F15170
0374 0 9058                 S       CEC09       ADDRESS AT HALF          89F15180
0375 0 D00D                 STO     CE030+1     BLOCK BOUNDARIES.        89F15190
0376 0 C053                 LD      CEC04                                89F15200
0377 0 8053                 A       CEC06                                89F15210
0378 0 1801                 SRA     ONE                                  89F15220
0379 0 9053                 S       CEC09                                89F15230
037A 0 D00A                 STO     CE040+1                              89F15240
037B 0 C050                 LD      CEC08       LOAD INDEX ONE WITH      89F15250
037C 0 1801                 SRA     ONE         HALF THE NUMBER OF       89F15260
037D 0 D001                 STO     CE020+1     WORDS IN THE BLOCK.      89F15270
037E 0 6500 0000      CE020 LDX   L1 *-*                                   89F15280
0380 0 10A1                 SLT     33          ZERO ACCUMULATOR         89F15290
0381 0 D846                 STD     CEC02       WORDS.                   89F15300
0382 0 C500 0000      CE030 LD    L1 *-*         COMPUTE THE SUM OF THE   89F15310
0384 0 A500 0000      CE040 M     L1 *-*         MULTIPLES OF THE RANDOM  89F15320
0386 0 8841                 AD      CEC02       NUMBERS OR THE BLOCK.    89F15330
0387 0 D840                 STD     CEC02                                89F15340
0388 0 71FF                 MDX     1 -1        DECREMENT COUNTER        89F15350
0389 0 70F8                 B       CE030       LOOP.                    89F15360
038A 0 4F00 0239            B     L3 CC070-BASE  RETURN TO DISTRIBUTOR.  89F15370
                      *                                                * 89F15380
                      ************************************************** 89F15390
                      *                                                * 89F15400
                      * RANDOM EXERCISE 1                              * 89F15410
                      *                                                * 89F15420
                      ************************************************** 89F15430
                      *                                                  89F15440
038C 0                CE110 EQU     *                                    89F15450
038C 0 C03D                 LD      CEC04       COMPUTE STARTING         89F15460
038D 0 903F                 S       CEC09       ADDRESS OF BLOCK.        89F15470
038E 0 D005                 STO     CE130+1                              89F15480
038F 0 C03C                 LD      CEC08       INITIALIZE XR1 WITH      89F15490
0390 0 D001                 STO     CE120+1     BLOCK SIZE WORD          89F15500
0391 0 6500 0000      CE120 LDX   L1 *-*         COUNT.                   89F15510
0393 0 C500 0000      CE130 LD    L1 *-*         LOAD EACH WORD AND COMPARE 89F15520
0395 0 F0BB                 EOR     CDC28       WITH MASK.               89F15530
0396 0 D031                 STO     CEC02       SAVE.                    89F15540
0397 0 71FF                 MDX     1 -1        DECREMENT ADDRESS COUNTER. 89F15550
0398 0 70FA                 B       CE130       LOOP NOT DONE.           89F15560
0399 0 4F00 0239            B     L3 CC070-BASE  RETURN TO DISTRIBUTOR.  89F15570
                      *                                                * 89F15580
                      ************************************************** 89F15590
                      *                                                * 89F15600
                      * RANDOM EXERCISE 2                              * 89F15610
                      *                                                * 89F15620
                      ************************************************** 89F15630
                      *                                                  89F15640
039B 0                CE210 EQU     *                                    89F15650
039B 0 C02E                 LD      CEC04       PUT STARTING ADDRESS     89F15660
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039C 0 D001                 STO     CE220+1     IN XR1.                  89F15670
039D 0 6500 0000      CE220 LDX   L1 *-*                                   89F15680
039F 0 4838                 SKP     +-Z                                  89F15690
03A0 0                CE230 EQU     *                                    89F15700
03A0 0 7101                 MDX   1 ONE                                  89F15710
03A1 0 C100                 LD    1 ZERO        RUN SOME INSTRUCTIONS    89F15720
03A2 0 F101                 EOR   1 ONE         ON LOCATION AND LOCATIONS 89F15730
03A3 0 8029                 A       CEC09       ON EITHER SIDE.          89F15740
03A4 0 E100                 AND   1 ZERO                                 89F15750
03A5 0 1803                 SRA     THREE                                89F15760
03A6 0 E8AA                 OR      CDC28                                89F15770
03A7 0 91FF                 S     1 -1                                   89F15780
03A8 0 D01F                 STO     CEC02                                89F15790
03A9 0 691E                 STX   1 CEC02       COMPARE TO END           89F15800
03AA 0 C01D                 LD      CEC02       ADDRESS.                 89F15810
03AB 0 F01F                 EOR     CEC06                                89F15820
03AC 0 4820                 SKP     Z           SKIP IF DONE.            89F15830
03AD 0 70F2                 B       CE230       LOOP.                    89F15840
03AE 0 4F00 0239            B     L3 CC070-BASE  RETURN TO DISTRIBUTOR.  89F15850
                      *                                                * 89F15860
                      ************************************************** 89F15870
                      *                                                * 89F15880
                      * RANDOM EXERCISE 3                              * 89F15890
                      *                                                * 89F15900
                      ************************************************** 89F15910
                      *                                                  89F15920
03B0 0                CE310 EQU     *                                    89F15930
03B0 0 C01B                 LD      CEC08       XR1 IS USED AS A         89F15940
03B1 0 D001                 STO     CE320+1     COUNTER.                 89F15950
03B2 0 6500 0000      CE320 LDX   L1 *-*                                   89F15960
03B4 0 1003                 SLA     THREE                                89F15970
03B5 0 4F1A 0354            BSC   L3 CE330-BASE,C+-  BRANCH IF 4K TEST.  89F15980
03B7 0 C00E                 LD      CE3C1       INITIALIZE SHIFT         89F15990
03B8 0 4838                 SKP     +-Z         INSTRUCTION FOR 8K TEST. 89F16000
03B9 0                CE330 EQU     *                                    89F16010
03B9 0 C00D                 LD      CE3C2       INITIALIZE SHIFT         89F16020
03BA 0 D002                 STO     CE350       INSTRUCTION FOR 4K TEST. 89F16030
03BB 0                CE340 EQU     *                                    89F16040
03BB 0 4700 026A            BSI   L3 CD001-BASE  GENERATE A RANDOM NUMBER. 89F16050
03BD 0 1800           CE350 SRA     0                                    89F16060
03BE 0 E80B                 OR      CEC04       BUILD A RANDOM ADDRESS AND 89F16070
03BF 0 D001                 STO     CE360+1     FETCH IT.                89F16080
03C0 0 C400 0000      CE360 LD    L *-*                                  89F16090
03C2 0 71FF                 MDX   1 -1          DECREMENT COUNTER.       89F16100
03C3 0 70F7                 B       CE340                                89F16110
03C4 0 4F00 0239            B     L3 CC070-BASE  RETURN TO DISTRIBUTOR.  89F16120
03C6 0 1803           CE3C1 SRA     THREE       8K SHIFT.                89F16130
03C7 0 1804           CE3C2 SRA     FOUR        4K SHIFT.                89F16140
                      *                                                * 89F16150
                      ************************************************** 89F16160
                      *                                                * 89F16170
                      * CONSTANTS AND WORK AREAS                       * 89F16180
                      *                                                * 89F16190
                      ************************************************** 89F16200
                      *                                                  89F16210
03C8    0002          CEC02 BSS   E 2           TWO WORD WORK AREA.      89F16220
03CA    0001          CEC04 BSS   E 1           START ADDRESS.           89F16230
03CB    0001          CEC06 BSS     1           END ADDRESS.             89F16240
03CC    0001          CEC08 BSS     1           NO. WORDS BEING EXERCISED. 89F16250
03CD 0 0001           CEC09 DC      1           ONE.                     89F16260
03CE    0001          CEC10 BSS     1           INDIRECT ADDRESS.        89F16270
03CF 0 0010           CEC12 DC      16          SIXTEEN.                 89F16280
                      *                                                * 89F16290
                      ************************************************** 89F16300
                      *                                                * 89F16310
                      * RANDOM EXERCISE 4                              * 89F16320
                      *                                                * 89F16330
                      ************************************************** 89F16340
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                        *                                                     * 89F16340
                        CE410 EQU     *                                       89F16350
03D0 0                        LD      CEC06       PUT HI ADDRESS IN INDIRECT 89F16360
03D0 0 C0FA                   STO     CEC10       ADDRESS WORD.              89F16370
03D1 0 D0FC                   LD      CEC08       USE XR1 AS                 89F16380
03D2 0 C0F9                   STO     CE420+1     A COUNTER.                 89F16390
03D3 0 D001             CE420 LDX   L1 *-*                                   89F16400
03D4 0 6500 0000        CE430 EQU     *                                       89F16410
03D6 0                        LD    I3 CEC10-BASE                           89F16420
03D6 0 C780 0369               SKP     +                                     89F16430
03D8 0 4808                   B       CE440                                 89F16440
03D9 0 7004                   SRA     FIVE        SOME INSTRUCTIONS.        89F16450
03DA 0 1805                   M     L3 CDC10-BASE                           89F16460
03DB 0 A700 02DE              B       CE450                                 89F16470
03DD 0 7004             CE440 EQU     *                                       89F16480
03DE 0                        SLT     16                                    89F16490
03DE 0 1090                   D     L3 CDC08-BASE                           89F16500
03DF 0 AF00 02DD              AD      CEC02                                 89F16510
03E1 0 88E6             CE450 EQU     *                                       89F16520
03E2 0                        STD     CEC02                                 89F16530
03E2 0 D8E5                   LD      CEC10       RIPPLE DOWN CORE.         89F16540
03E3 0 C0EA                   S       CEC09                                 89F16550
03E4 0 90E8                   STO     CEC10                                 89F16560
03E5 0 D0E8                   MDX   1 -1          DECREMENT WORD COUNTER.   89F16570
03E6 0 71FF                   B       CE430       LOOP.                     89F16580
03E7 0 70EE                   B     L3 CC070-BASE  RETURN TO DISTRIBUTOR.   89F16590
03E8 0 4F00 0239        *                                                     * 89F16600
                        ***************************************************** 89F16610
                        *                                                     * 89F16620
                        * RANDOM EXERCISE 5                                   * 89F16630
                        *                                                     * 89F16640
                        ***************************************************** 89F16650
                        *                                                     * 89F16660
                        CE510 EQU     *                                       89F16670
03EA 0                        LD      CEC06       USE XR1 TO ADDRESS.       89F16680
03EA 0 C0E0                   STO     CE520+1     CORE.                     89F16690
03EB 0 D001             CE520 LDX   L1 *-*                                   89F16700
03EC 0 6500 0000              MDX   1 -8          OBSERVE BOUNDARIES.       89F16710
03EE 0 71F8                   LD      CEC08       PUT WORD COUNT            89F16720
03EF 0 C0DC                   S       CEC12       IN CEC02.                 89F16730
03F0 0 90DE                   STO     CEC02                                 89F16740
03F1 0 D0D6             CE530 EQU     *                                       89F16750
03F2 0                        LD    1 ZERO        EXERCISE THE GENERAL      89F16760
03F2 0 C100                   LD    1 -7          AREA.                     89F16770
03F3 0 C1F9                   LD    1 8                                     89F16780
03F4 0 C108                   LD    1 -2                                    89F16790
03F5 0 C1FE                   LD    1 ZERO                                  89F16800
03F6 0 C100                   LD    1 3                                     89F16810
03F7 0 C103                   LD    1 4                                     89F16820
03F8 0 C104                   LD    1 -8                                    89F16830
03F9 0 C1F8                   LD    1 5                                     89F16840
03FA 0 C105                   LD    1 7                                     89F16850
03FB 0 C107                   LD    1 -3                                    89F16860
03FC 0 C1FD                   LD    1 2                                     89F16870
03FD 0 C102                   LD    1 -6                                    89F16880
03FE 0 C1FA                   LD    1 ZERO                                  89F16890
03FF 0 C100                   LD    1 -4                                    89F16900
0400 0 C1FC                   LD    1 1                                     89F16910
0401 0 C101                   LD    1 6                                     89F16920
0402 0 C106                   LD    1 -5                                    89F16930
0403 0 C1FB                   LD      CEC02       DECREMENT WORD            89F16940
0404 0 C0C3                   S       CEC09       COUNTER.                  89F16950
0405 0 90C7                   SKP     +-          SKIP NOT DONE.            89F16960
0406 0 4818                   B       CE540       BRANCH IF DONE.           89F16970
0407 0 7003                   STO     CEC02       UPDATE COUNTER.           89F16980
0408 0 D0BF                   MDX   1 -1          UPDATE WORD POINTER.      89F16990
0409 0 71FF                   B       CE530       LOOP.                     89F17000
040A 0 70E7             CE540 EQU     *                                       89F17010
040B 0
```



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040B 0 4F00 0239               B    L3 CC070-BASE  RETURN TO DISTRIBUTOR.   89F17020
                        *                                                     * 89F17030
                        ***************************************************** 89F17040
                        *                                                     * 89F17050
                        * RANDOM EXERCISE 6                                   * 89F17060
                        *                                                     * 89F17070
                        ***************************************************** 89F17080
                        *                                                     * 89F17090
040D 0                  CE610 EQU     *                                       89F17100
040D 0 C0BC                   LD      CEC04       USE XR1 TO ADDRESS        89F17110
040E 0 D001                   STO     CE620+1     CORE.                     89F17120
040F 0 6500 0000        CE620 LDX   L1 *-*                                   89F17130
0411 0 C0BA                   LD      CEC08       PUT WORD COUNT IN         89F17140
0412 0 D0B5                   STO     CEC02       CEC02, USE AS COUNTER.    89F17150
0413 0                  CE630 EQU     *                                       89F17160
0413 0 C900                   LDD   1 0                                     89F17170
0414 0 C910                   LDD   1 16                                    89F17180
0415 0 C920                   LDD   1 32                                    89F17190
0416 0 C940                   LDD   1 64                                    89F17200
0417 0 C9F0                   LDD   1 -16                                   89F17210
0418 0 C9E0                   LDD   1 -32                                   89F17220
0419 0 C9C0                   LDD   1 -64                                   89F17230
041A 0 C980                   LDD   1 -128                                  89F17240
041B 0 C0AC                   LD      CEC02                                 89F17250
041C 0 90B0                   S       CEC09       DECREMENT WORD COUNTER    89F17260
041D 0 4818                   SKP     +-          AND TEST, SKIP IF MORE TO 89F17270
041E 0 7003                   B       CE640       DO.  BRANCH IF DONE.      89F17280
041F 0 D0A8                   STO     CEC02       UPDATE COUNTER.           89F17290
0420 0 7101                   MDX   1 1          INCREMENT ADDRESS POINTER. 89F17300
0421 0 70F1                   B       CE630                                 89F17310
0422 0                  CE640 EQU     *                                       89F17320
0422 0 4F00 0239               B    L3 CC070-BASE  RETURN TO DISTRIBUTOR.   89F17330
                        *                                                     * 89F17340
                        ***************************************************** 89F17350
                        *                                                     * 89F17360
                        *                                                       89F17370
                        * PATTERN TEST COMPLETE.                               89F17380
                        *                                                       89F17390
0424 0                  CC520 EQU     *                                       89F17400
                        *                                                       89F17410
                        * UPPER ADDRESS LIMIT OF PATTERN TESTS.                89F17420
                        *                                                       89F17430
0424 0                  ETEST EQU     *                                       89F17440
                        *                                                     * 89F17450
                        ***************************************************** 89F17460
                        *                                                       89F17470
                        * SUMMARY LOG ROUTINE.                                 89F17480
                        *                                                       89F17490
                        ***************************************************** 89F17500
                        *                                                     * 89F17510
0424 0                  HZ100 EQU     *                                       89F17520
0424 0 620F                   LDX   2 /F          XR2 INDICATES ROUTINE ID. 89F17530
0425 0 C037                   LD      HZK08       INITIALIZE LINE BUFFER    89F17540
0426 0 D700 0BC0              STO   L3 SUC80-BASE  WORD COUNT FOR SUMMARY.  89F17550
0428 0 C032                   LD      HZK02       INITIALIZE BSM ID. COUNTER 89F17560
0429 0 D030                   STO     HZK01       STORAGE.                  89F17570
042A 0                  HZ110 EQU     *                                       89F17580
042A 0 1008                   SLA     EIGHT       LINE.                     89F17590
042B 0 D045                   STO     HZK92                                 89F17600
042C 0 4045                   BSI     HZ200       TEST FOR NON-ZERO LOOP    89F17610
042D 0 0F74                   DC      PXK60-BASE-1  COUNTER.                89F17620
042E 0 7014                   B       HZ145       BRANCH IF UNTESTED BSM.   89F17630
042F 0 4700 06DA              BSI   L3 MA010-BASE  WRITE A SPACE.           89F17640
0431 0 F000                   DC      /F000       SPACE FUNCTION.           89F17650
0432 0 4700 06DA              BSI   L3 MA010-BASE  WRITE HEADING.           89F17660
0434 0 0403                   DC      HZK90-BASE  HEADING MESSAGE.          89F17670
0435 0 403C                   BSI     HZ200       TEST FOR NON ZERO ERROR   89F17680
0436 0 0F5C                   DC      PXK50-BASE-1  COUNTER.                89F17690
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0437 0 7006                B       HZ140      BRANCH IF NO ERRORS.          89F17700
0438 0 4700 093D           BSI  L3 SB010-BASE  WRITE BIT FAIL. SUMMARY.      89F17710
043A 0 4700 0A18           BSI  L3 SE010-BASE  WRITE ADDR. LINE SUMMARY.     89F17720
043C 0 4700 0AFA           BSI  L3 SI010-BASE  WRITE S/I SUMMARY.           89F17730
043E 0                     HZ140 EQU  *                                     89F17740
043E 0 4700 0B41           BSI  L3 SL010-BASE  WRITE PATT. FAIL. SUMMARY    89F17750
0440 0 4700 06DA           BSI  L3 MA010-BASE  WRITE A SPACE.               89F17760
0442 0 F000                DC      /F000      SPACE FUNCTION.               89F17770
0443 0                     HZ145 EQU  *                                     89F17780
0443 0 C700 FFF5           LD   L3 AAC04-BASE  TEST FOR LAST BSM            89F17790
0445 0 F014                EOR     HZK01      SUMMARIZED.                   89F17800
0446 0 4818                SKP     +-         SKIP IF NOT.                  89F17810
0447 0 7004                B       HZ150      BRANCH IF DONE.               89F17820
0448 0 C011                LD      HZK01      UPDATE BSM                    89F17830
0449 0 8011                A       HZK02      ID.                           89F17840
044A 0 D00F                STO     HZK01                                    89F17850
044B 0 70DE                B       HZ110      LOOP FOR ANOTHER SUMMARY.     89F17860
044C 0                     HZ150 EQU  *                                     89F17870
044C 0 4700 06DA           BSI  L3 MA010-BASE  WRITE A SPACE.               89F17880
044E 0 F000                DC      /F000      SPACE FUNCTION.               89F17890
044F 0 4700 06DA           BSI  L3 MA010-BASE  WRITE END MESSAGE.           89F17900
0451 0 03F9                DC      HZK80-BASE  MESSAGE.                     89F17910
0452 0 4700 06DA           BSI  L3 MA010-BASE  WRITE A SPACE.               89F17920
0454 0 F000                DC      /F000      SPACE FUNCTION.               89F17930
0455 0 3050                WAT50 WAIT  /50        END WAIT.                 89F17940
0456 0 4700 08FB           BSI  L3 PT010-BASE  ZERO SUMMARY STORAGE.        89F17950
0458 0 4F00 FFB0           B    L3 AA020-BASE  LOOP ON PROGRAM.             89F17960
                           ************************************************ 89F17970
                           *                                              * 89F17980
                           * CONSTANTS AND WORK AREAS                     * 89F17990
                           *                                              * 89F18000
                           ************************************************ 89F18010
                           *                                              * 89F18020
045A   0001                HZK01 BSS      1           BSM ID.               89F18030
045B 0 0001                HZK02 DC       1           ONE.                  89F18040
                           *                                               89F18050
                           * IF THE NUMBER OF PATTERN TEST ENTRIES CHANGES IN 89F18060
                           * THE TABLE PXK50, THE FOLLOWING CONSTANTS MUST  89F18070
                           * BE CHANGED.                                    89F18080
                           *                                               89F18090
0003 0                     HZK03 EQU      3           NUMBER OF SUMMARIES.  89F18100
045C 0 0003                HZK04 DC       3           NUMBER OF SUMMARIES.  89F18110
                           *                          RELATIVE BASE ADDRESS OF 89F18120
045D 0 000B                HZK08 DC       11          LINE BUFFER WORD COUNT. 89F18130
045E 0 0009                HZK80 DC       9           END MESSAGE.          89F18140
045F 0 0105                      DC       /0105      15                    89F18150
0460 0 0A09                      DC       /0A09      09                    89F18160
0461 0 0035                      DC       /0035       E                    89F18170
0462 0 2534                      DC       /2534      ND                    89F18180
0463 0 0033                      DC       /0033       C                    89F18190
0464 0 2629                      DC       /2629      OR                    89F18200
0465 0 3500                      DC       /3500      E                     89F18210
0466 0 1335                      DC       /1335      TE                    89F18220
0467 0 1213                      DC       /1213      ST                    89F18230
0468 0 0009                HZK90 DC       9           HEADING.              89F18240
0469 0 1214                      DC       /1214      SU                    89F18250
046A 0 2424                      DC       /2424      MM                    89F18260
046B 0 3129                      DC       /3129      AR                    89F18270
046C 0 1800                      DC       /1800      Y                     89F18280
046D 0 3626                      DC       /3626      FO                    89F18290
046E 0 2900                      DC       /2900      R                     89F18300
046F 0 3212                      DC       /3212      BS                    89F18310
0470 0 2400                      DC       /2400      M                     89F18320
0471 0 0000                HZK92 DC       /0000      X                     89F18330
                           *                                              * 89F18340
                           ************************************************ 89F18350
0472 0 0000                HZ200 DC       *-*        ENTRY.                89F18360
0473 0 C0E6                      LD       HZK01      IF EACH COUNTER IN THE 89F18370
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0474 0 90E6                      S        HZK02      INDICATED ARRAY IS ZERO, 89F18380
0475 0 A0E6                      M        HZK04      RETURN AT CALL+2,        89F18390
0476 0 18D0                      XCH                 OTHERWISE RETURN AT      89F18400
0477 0 8780 040D                 A     I3 HZ200-BASE  CALL+3.                 89F18410
0479 0 8301                      A     3  ONE                                 89F18420
047A 0 D005                      STO      HZ210+1                            89F18430
047B 0 C0F6                      LD       HZ200      INCREMENT RETURN ADDRESS 89F18440
047C 0 80DE                      A        HZK02      PAST ARRAY PARAMETER.    89F18450
047D 0 D0F4                      STO      HZ200                               89F18460
047E 0 6103                      LDX   1  HZK03      USE XR1 AS A LOOP COUNTER. 89F18470
047F 0 C500 0000           HZ210 LD    L1 *-*                                 89F18480
0481 0 4820                      SKP      Z          TEST EACH COUNTER IN ARRAY 89F18490
0482 0 7003                      B        HZ220      FOR ZERO.                89F18500
0483 0 71FF                      MDX   1  -1         DECREMENT LOOP COUNTER   89F18510
0484 0 70FA                      B        HZ210      UNTIL TOTAL ARRAY IS DONE. 89F18520
0485 0 7003                      B        HZ230      RETURN.                  89F18530
0486 0                     HZ220 EQU  *                                       89F18540
0486 0 C0EB                      LD       HZ200      INCREMENT RETURN ADDRESS 89F18550
0487 0 80D3                      A        HZK02      IF A MEMBER OF THE       89F18560
0488 0 D0E9                      STO      HZ200      ARRAY IS NON-ZERO.       89F18570
0489 0                     HZ230 EQU  *                                       89F18580
0489 0 4F80 040D                 B     I3 HZ200-BASE  RETURN.                  89F18590
                           ************************************************ 89F18600
                           *                                              * 89F18610
                           * COUNTER OVERFLOW ERROR SUBROUTINE            * 89F18620
                           *                                              * 89F18630
                           ************************************************ 89F18640
                           *                                              * 89F18650
048B 0                     HZ500 EQU  *                                       89F18660
048B 0 6A08                      STX   2 HZX92      CONVERT PATTERN ID. FOR  89F18670
048C 0 C007                      LD       HZX92      ERROR MESSAGE.           89F18680
048D 0 400E                      BSI      IC010      CONVERT CHARACTERS AND PUT 89F18690
048E 0 D005                      STO      HZX92      IN MESSAGE AND           89F18700
048F 0 4700 06DA                 BSI  L3 MA010-BASE  WRITE IT.                89F18710
0491 0 042E                      DC       HZX90-BASE MESSAGE.                 89F18720
0492 0 7091                      B        HZ100      BRANCH TO SUMMARIZE.     89F18730
                           *                                              * 89F18740
                           ************************************************ 89F18750
                           *                                              * 89F18760
                           * MESSAGE                                      * 89F18770
                           *                                              * 89F18780
                           ************************************************ 89F18790
                           *                                              * 89F18800
0493 0 0008                HZX90 DC       8           MESSAGE.              89F18810
0494 0 0000                HZX92 DC       /0000       XX    PATTERN ID.     89F18820
0495 0 0A09                      DC       /0A09       09    ERROR ID.       89F18830
0496 0 0033                      DC       /0033        C                    89F18840
0497 0 1329                      DC       /1329       TR                    89F18850
0498 0 3B00                      DC       /3B00       .                     89F18860
0499 0 2636                      DC       /2636       OF                    89F18870
049A 0 2326                      DC       /2326       LO                    89F18880
049B 0 163B                      DC       /163B       W.                    89F18890
                           *                                              * 89F18900
                           ************************************************ 89F18910
                           ************************************************ 89F18920
                           *                                              * 89F18930
                           * PATTERN ID. CONVERSION SUBROUTINE            * 89F18940
                           *                                              * 89F18950
                           ************************************************ 89F18960
                           *                                              * 89F18970
                           * THIS SUBROUTINE CONVERTS THE BINARY PATTERN   * 89F18980
                           * IN THE ACCUMULATOR TO TWO 1443 CHARACTERS.    * 89F18990
                           * THERE IS NO MAGNITUDE CHECK.                  * 89F19000
                           *                                              * 89F19010
                           * CALL -                                       * 89F19020
                           *                                              * 89F19030
                           *     BSI      IC010                           * 89F19040
                           *                                              * 89F19050
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                        *     THE VALUE TO CONVERT IS IN THE ACCUMULATOR.  * 89F19060
                        *                                                 * 89F19070
                        *     XR1 AND XR2 ARE NOT USED.                   * 89F19080
                        *                                                 * 89F19090
                        *     XR3 IS THE PSEUDO BASE REGISTER.            * 89F19100
                        *                                                 * 89F19110
                        *     TWO 1443 CHARACTERS ARE IN THE ACCUMULATOR  * 89F19120
                        *     AT EXIT.                                    * 89F19130
                        *                                                 * 89F19140
                        *                                   3/18/69       * 89F19150
                        *                                                 * 89F19160
                        ************************************************* 89F19170
                        *                                                 * 89F19180
049C 0 0000             IC010 DC      *-*         ENTRY.                    89F19190
049D 0 1890                   SRT     16          PREPARE FOR DIVISION.     89F19200
049E 0 A809                   D       ICC02       DIVIDE BY TEN.            89F19210
049F 0 4808                   SKP     +           SKIP NOT ZERO.            89F19220
04A0 0 C007                   LD      ICC02       LOAD 1443 CHARACTER 0.    89F19230
04A1 0 18D0                   RTE     16          EXCHANGE.                 89F19240
04A2 0 4808                   SKP     +           SKIP NOT ZERO.            89F19250
04A3 0 C004                   LD      ICC02       LOAD 1443 CHARACTER ZERO. 89F19260
04A4 0 1008                   SLA     EIGHT       PUT THE TWO CHARACTERS    89F19270
04A5 0 18C8                   RTE     EIGHT       TOGETHER IN THE ACC.      89F19280
04A6 0 4F80 0437              B    I3 IC010-BASE  RETURN.                   89F19290
                        ************************************************* 89F19300
                        *                                                 * 89F19310
                        * CONSTANTS                                       * 89F19320
                        *                                                 * 89F19330
                        ************************************************* 89F19340
                        *                                                 * 89F19350
04A8 0 000A             ICC02 DC      /000A       TEN AND 1443 CHARACTER 0. 89F19360
                        *                                                 * 89F19370
                        ************************************************* 89F19380
                        ************************************************* 89F19390
                        *                                                 * 89F19400
                        * OP CODE CHECK                                   * 89F19410
                        *                                                 * 89F19420
                        ************************************************* 89F19430
                        *                                                 * 89F19440
04A9 0 0000             IG010 DC      *-*         ENTRY.                    89F19450
04AA 0 4700 0BAF              BSI  L3 SU010-BASE  ZERO LINE BUFFER.         89F19460
04AC 0 C02E                   LD      II010       COMPUTE ERROR ADDRESS     89F19470
04AD 0 90AD                   S       HZK02       AND LOAD INTO             89F19480
04AE 0 D001                   STO     IG020+1     MESSAGE.                  89F19490
04AF 0 6500 0000        IG020 LDX  L1 *-*                                   89F19500
04B1 0 4700 0674              BSI  L3 KB010-BASE  PUT ADDR. IN LINE BUFFER. 89F19510
04B3 0 4700 06B8              BSI  L3 KL010-BASE  IS INTERRUPT IN PATTERN    89F19520
04B5 0 40E6                   BSI     IC010       CONVERT CHARACTERS AND    89F19530
04B6 0 D00B                   STO     IGC02       PUT IN ERROR MESSAGE.     89F19540
04B7 0 C80A                   LDD     IGC02       LOAD ERROR ID.            89F19550
04B8 0 4700 0BE6              BSI  L3 SV010-BASE  LOG ERROR.                89F19560
04BA 0 C700 04D0              LD   L3 IIC34-BASE  CHECK FOR PARITY ERROR    89F19570
04BC 0 1001                   SLA     ONE         TOO.                      89F19580
04BD 0 4828                   SKP     +Z          SKIP IF NONE.             89F19590
04BE 0 4038                   BSI     II200       LOG PARITY ERROR.         89F19600
04BF 0 30F1             WATF1 WAIT    /F1         OP CODE CHECK WAIT.       89F19610
04C0 0 700B                   B       IH030       EXIT TO SUMMARY LOG.      89F19620
                        ************************************************* 89F19630
                        *                                                 * 89F19640
                        * CONSTANTS                                       * 89F19650
                        *                                                 * 89F19660
                        ************************************************* 89F19670
                        *                                                 * 89F19680
04C2   0001             IGC02 BSS  E  1           ERROR CODE FOR OP         89F19690
04C3 0 0301                   DC      /0301       CODE CHECK.               89F19700
                        *                                                 * 89F19710
                        ************************************************* 89F19720
                        ************************************************* 89F19730
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                        *                                                 * 89F19740
                        * STORAGE PROTECT CHECK                           * 89F19750
                        *                                                 * 89F19760
                        ************************************************* 89F19770
                        *                                                 * 89F19780
04C4 0 0000             IH010 DC      *-*         ENTRY.                    89F19790
                        *                                                   89F19800
                        * UNKNOWN STORAGE PROTECT INTERRUPT.                89F19810
                        *                                                   89F19820
04C5 0                  IH020 EQU     *                                     89F19830
04C5 0 4700 06B8              BSI  L3 KL010-BASE  IS INTERRUPT IN PAT. TEST 89F19840
04C7 0 40D4                   BSI     IC010       INTERRUPT MESSAGE.        89F19850
04C8 0 D008                   STO     IHC08                                 89F19860
04C9 0 4700 06DA              BSI  L3 MA010-BASE  WRITE MESSAGE.            89F19870
04CB 0 046B                   DC      IHC06-BASE                            89F19880
04CC 0                  IH030 EQU     *                                     89F19890
04CC 0 C00D                   LD      IHC10       RESET RETURN ADDRESS TO   89F19900
04CD 0 8301                   A    3  ONE         SUMMARY LOG AND           89F19910
04CE 0 D00C                   STO     II010       EXIT.                     89F19920
04CF 0 701C                   B       II040                                 89F19930
                        ************************************************* 89F19940
                        *                                                 * 89F19950
                        * CONSTANTS AND WORK AREAS                        * 89F19960
                        *                                                 * 89F19970
                        ************************************************* 89F19980
                        *                                                 * 89F19990
04D0 0 0009             IHC06 DC      9           MESSAGE.                  89F20000
04D1 0 0000             IHC08 DC      /0000       XX                        89F20010
04D2 0 0306                   DC      /0306       36                        89F20020
04D3 0 0000                   DC      /0000                                 89F20030
04D4 0 1213                   DC      /1213       ST                        89F20040
04D5 0 2629                   DC      /2629       OR                        89F20050
04D6 0 3B00                   DC      /3B00       .                         89F20060
04D7 0 2729                   DC      /2729       PR                        89F20070
04D8 0 2613                   DC      /2613       OT                        89F20080
04D9 0 3B00                   DC      /3B00       .                         89F20090
04DA 0 03BF             IHC10 DC      HZ100-BASE  SUMMARY LOG ENTRY ADDR.    89F20100
                        *                                                 * 89F20110
                        ************************************************* 89F20120
                        ************************************************* 89F20130
                        *                                                 * 89F20140
                        * INTERNAL INTERRUPT SUBROUTINE                   * 89F20150
                        *                                                 * 89F20160
                        ************************************************* 89F20170
                        *                                                 * 89F20180
                        * THIS SUBROUTINE HANDLES ALL OF THE INTERNAL     * 89F20190
                        * INTERRUPTS.                                     * 89F20200
                        *                                                 * 89F20210
                        ************************************************* 89F20220
                        *                                                 * 89F20230
04DB 0 0000             II010 DC      *-*         INTERNAL INTERRUPT ROUTINE 89F20240
04DC 0 D849                   STD     IIC02       SAVE A & Q.               89F20250
04DD 0 6912                   STX   1 II050+1     SAVE XR1.                 89F20260
04DE 0 6A13                   STX   2 II060+1     SAVE XR2.                 89F20270
04DF 0 2813                   STS     II070       SAVE STATUS.              89F20280
04E0 0 6205                   LDX   2 FIVE        XR2 = COUNT               89F20290
04E1 0 C048                   LD      IIC06       COMPUTE ABSOLUTE ADDRESS  89F20300
04E2 0 8301                   A    3  ONE         OF BASE OF INTERRUPT      89F20310
04E3 0 D004                   STO     II020+1     SUBROUTINE TABLE.         89F20320
04E4 0 0843                   XIO     IIC04       SENSE ILSW.               89F20330
04E5 0 D04F                   STO     IIC34       SAVE ILSW.                89F20340
04E6 0 1240                   SLCA  2 ZERO        CHECK INTERRUPT CAUSE.    89F20350
04E7 0 C600 0000        II020 LD   L2 *-*         COMPUTE ABSOLUTE ADDRESS  89F20360
04E9 0 D001                   STO     II030+1                               89F20370
04EA 0 4700 0000        II030 BSI  L3 *-*                                   89F20380
04EC 0                  II040 EQU     *           RESTORE REGISTERS.        89F20390
04EC 0 083B                   XIO     IIC04       CHECK FOR MORE INTERNAL   89F20400
04ED 0 4820                   SKP     Z           INTERRUPTS.               89F20410
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04EE 0 7047                    B       WATF2       MULTIPLE ERRORS.                89F20420
04EF 0 6500 0000       II050 LDX  L1 *-*          RESTORE XR1                     89F20430
04F1 0 6600 0000       II060 LDX  L2 *-*          RESTORE XR2.                    89F20440
04F3 0 2000            II070 LDS     0            RESTORE STATUS.                 89F20450
04F4 0 C831                  LDD     IIC02        RESTORE A & Q.                  89F20460
04F5 0 4FC0 0476             BOSC I3 II010-BASE   RETURN.                         89F20470
                       *                                                          89F20480
                       * B REGISTER PARITY ERROR.                                 89F20490
                       *                                                          89F20500
04F7 0 0000            II200 DC      *-*          ENTRY.                          89F20510
                       *                                                          89F20520
                       * PREPARE FOR POSSIBLE SEARCH.                             89F20530
                       *                                                          89F20540
04F8 0 1810                  SRA     16           INITIALIZE SEARCH ADDRESS       89F20550
04F9 0 D700 0587             STO  L3 IXC34-BASE   SWITCH, INITIALIZE              89F20560
04FB 0 902C                  S       IIC04        PARITY COUNTER.                 89F20570
04FC 0 D700 0586             STO  L3 IXC32-BASE                                   89F20580
04FE 0 C034                  LD      IIC26        INITIALIZE NEW INTERNAL         89F20590
04FF 0 8301                  A     3 ONE          INTERRUPT CELL.                 89F20600
0500 0 D400 0008             STO  L  EIGHT                                        89F20610
0502 0 4700 06B8             BSI  L3 KL010-BASE   IS INTERRUPT IN PATTERN         89F20620
0504 0 4804                  SKP     E            IF PATTERN ID. IS 0 OR 2        89F20630
0505 0 7002                  B       II220        SEARCH CORE FOR PARITY          89F20640
0506 0 C02A                  LD      IIC14        INTERRUPT, IGNORE XR1 TEST      89F20650
0507 0 4838                  SKP     +-Z                                          89F20660
0508 0                 II220 EQU     *                                           89F20670
0508 0 C029                  LD      IIC16                                        89F20680
0509 0 D004                  STO     II230+1                                      89F20690
050A 0 081D                  XIO     IIC04        TEST FOR MULTIPLE INTERNAL      89F20700
050B 0 4820                  SKP     Z            INTERRUPTS.                     89F20710
050C 0 7029                  B       WATF2        BRANCH TO ERROR WAIT IF SO      89F20720
050D 0 4F40 0000       II230 BOSC L3 *-*          RESET INTERRUPT LEVEL.          89F20730
050F 0                 II235 EQU     *                                           89F20740
                       *                                                          89F20750
                       * TEST LOCATION ADDRESSED BY XR1 FIRST.                   89F20760
                       *                                                          89F20770
050F 0 C100                  LD    1 ZERO         READ/WRITE LOCATION.            89F20780
                       *                                                          89F20790
                       * IF THERE WAS NO INTERRUPT, THE ERROR LOCATION           89F20800
                       * MUST BE SEARCHED OUT.                                    89F20810
                       *                                                          89F20820
0510 0                 II240 EQU     *            IAR AT INTERRUPT TIME.          89F20830
0510 0 6500 0000       II250 LDX  L1 *-*          USE XR1 TO ADDRESS CORE.        89F20840
0512 0                 II255 EQU     *                                           89F20850
0512 0 C100                  LD    1 ZERO         READ/WRITE EACH WORD.           89F20860
0513 0                 II260 EQU     *            IAR AT INTERRUPT.               89F20870
0513 0 71FF                  MDX   1 -1           DECREMENT ADDRESS REGISTER      89F20880
0514 0 1000                  NOP                  AND IGNORE SKIPS AT 32K.        89F20890
0515 0 7100                  MDX   1 ZERO         ADDRESS REGISTER AT ZERO.       89F20900
0516 0 70FB                  B       II255        NO-LOOP.                        89F20910
                       *                                                          89F20920
                       * SEARCHED ALL POSITIONS.                                 89F20930
                       *                                                          89F20940
0517 0 C700 0587             LD   L3 IXC34-BASE   WAS THERE AN INTERNAL           89F20950
0519 0 4820                  SKP     Z            PARITY ERROR.                   89F20960
                       *                                                          89F20970
051A 0 701D                  B       WATF3        INTERNAL ERROR.                 89F20980
                       *                                                          89F20990
051B 0                 II295 EQU     *                                           89F21000
                       *                                                          89F21010
                       * CHECK FOR WAIT ON ERROR.                                 89F21020
                       *                                                          89F21030
051B 0 0F00 002D             XIO  L3 AAC50-BASE   CHECK SWITCH 14.                89F21040
051D 0 1801                  SRA     ONE                                          89F21050
051E 0 4804                  SKP     E            SKIP IF OFF.                    89F21060
051F 0 3072            WAT72 WAIT    /72          WAIT ON ERROR, SW. 14 SET.      89F21070
0520 0 C013                  LD      IIC32        RESTORE INTERRUPT CELL.         89F21080
0521 0 8301                  A     3 ONE                                          89F21090
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0522 0 D400 0008             STO  L  EIGHT                                        89F21100
0524 0 4F80 0492             B    I3 II200-BASE   RETURN.                         89F21110
                       ************************************************** 89F21120
                       *                                                * 89F21130
                       * CONSTANTS AND WORK AREAS                       * 89F21140
                       *                                                * 89F21150
                       ************************************************** 89F21160
                       *                                                * 89F21170
0526    0002           IIC02 BSS  E  2              AREA TO SAVE A & Q.             89F21180
0528 0 0001           IIC04 DC      1              ONE, ALSO, IOCC TO SENSE        89F21190
0529 0 0300                 DC      /0300          INTERNAL ILSW.                  89F21200
                       *                            RELATIVE BASE ADDRESS         89F21210
052A 0 04C6           IIC06 DC      IIC08-BASE     OF INTERRUPT TABLE.             89F21220
052B 0 0606           IIC08 DC      IY010-BASE     FALSE INTERRUPT.                89F21230
052C 0 05F8                 DC      IXXXX-BASE     AUX CORE ERROR                  89F21240
052D 0 05DD                 DC      IX800-BASE     CAR CHECK INTERRUPT.            89F21250
052E 0 045F                 DC      IH010-BASE     STORAGE PROTECT INTERRUPT       89F21260
052F 0 0492                 DC      II200-BASE     B REGISTER PARITY CHECK.        89F21270
0530 0 0444                 DC      IG010-BASE     OP CODE CHECK.                  89F21280
0531 0 04AB           IIC14 DC      II240-BASE     ENTERY ADDRESS FOR              89F21290
0532 0 04AA           IIC16 DC      II235-BASE     INTERRUPT IDENTIFICATION.       89F21300
                       *                            RELATIVE BASE ADDRESS OF      89F21310
0533 0 04D5           IIC26 DC      IX010-BASE     SEARCH INTERRUPT SUBR.          89F21320
                       *                            RELATIVE BASE ADDRESS         89F21330
0534 0 0476           IIC32 DC      II010-BASE     OF INTERRUPT ROUTINE.           89F21340
0535    0001          IIC34 BSS     1              STORAGE FOR ILSW.               89F21350
                       *                                                * 89F21360
                       ************************************************** 89F21370
                       *                                                89F21380
                       * MULTIPLE INTERNAL INTERRUPTS.                  89F21390
                       *                                                89F21400
0536 0                 WATF2 EQU     *                                  89F21410
0536 0 30F2                  WAIT    /F2            ERROR WAIT.                     89F21420
0537 0 70FE                  B       WATF2          UNRECOVERABLE ERROR.            89F21430
                       *                                                89F21440
                       * INTERNAL PARITY ERROR.                         89F21450
                       *                                                89F21460
0538 0                 WATF3 EQU     *                                  89F21470
0538 0 30F3                  WAIT    /F3            ERROR WAIT.                     89F21480
0539 0 70FE                  B       WATF3          UNRECOVERABLE ERROR.            89F21490
                       ************************************************** 89F21500
                       *                                                * 89F21510
                       * ALTERNATE INTERNAL INTERRUPT SUBROUTINE        * 89F21520
                       *                                                * 89F21530
                       ************************************************** 89F21540
                       *                                                * 89F21550
                       * THIS SUBROUTINE IS USED BY THE INTERNAL INTER- * 89F21560
                       * RUPT SUBROUTINE TO FIND THE LOCATION OR        * 89F21570
                       * LOCATIONS WITH PARITY ERRORS.                  * 89F21580
                       *                                                * 89F21590
                       * OP CODE CHECK ERRORS ARE HANDLED BY INTERFACING * 89F21600
                       * WITH THE NORMAL SUBROUTINE IG010.              * 89F21610
                       *                                                * 89F21620
                       * PARITY ERRORS ARE HANDLED AND LOGGED INTERNALLY.* 89F21630
                       *                                                * 89F21640
                       * THERE SHOULD NEVER BE ANY MEMORY PROTECT ERRORS.* 89F21650
                       *                                                * 89F21660
                       * CAR CHECKS AND FALSE INTERRUPTS ARE HANDLED BY * 89F21670
                       * INTERFACING WITH THE NORMAL SUBROUTINES, IX800 * 89F21680
                       * AND IY010.                                     * 89F21690
                       *                                                * 89F21700
                       *                                    3/19/69     * 89F21710
                       *                                                * 89F21720
                       ************************************************** 89F21730
                       *                                                89F21740
053A 0 0000           IX010 DC      *-*            ENTRY.                          89F21750
053B 0 D018                 STO     IXC10          SAVE POSSIBLE FAILURE PTRN      89F21760
053C 0 4700 0BAF            BSI  L3 SU010-BASE     ZERO LINE BUFFER.               89F21770
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053E 0 6205              LDX   2 FIVE       XR2 = COUNT                    89F21780
053F 0 C00B              LD      IXC02      COMPUTE ABSOLUTE ADDRESS       89F21790
0540 0 8301              A     3 ONE        FOR INTERRUPT LOOKUP           89F21800
0541 0 D003              STO     IX020+1    OPERAND.                       89F21810
0542 0 0817              XIO     IXC22      DETERMINE CAUSE OF             89F21820
0543 0 1240              SLCA  2 ZERO       INTERRUPT.                     89F21830
0544 0 C600 0000  IX020  LD    L2 *-*        LOAD SUBROUTINE BASE ADDR.     89F21840
0546 0 D001              STO     IX030+1    INITIALIZE BRANCH OPERAND.     89F21850
0547 0 4700 0000  IX030  BSI   L3 *-*        ENTER INTERRUPT SUBROUTINE     89F21860
0549 0 4FC0 04D5         BOSC  I3 IX010-BASE  RESET INTERRUPT AND EXIT.     89F21870
                         *                                               * 89F21880
                         ************************************************* 89F21890
                         *                                               * 89F21900
                         * CONSTANTS AND WORK AREAS                      * 89F21910
                         *                                               * 89F21920
                         ************************************************* 89F21930
                         *                                               * 89F21940
                         *                          RELATIVE BASE ADDRESS OF 89F21950
054B 0 04E7       IXC02  DC       IXC04-BASE   INTERRUPT TABLE.           89F21960
054C 0 0606       IXC04  DC       IY010-BASE   FALSE INTERRUPT.           89F21970
054D 0 05F8              DC       IXXXX-BASE   AUX CORE ERROR             89F21980
054E 0 05DD              DC       IX800-BASE   CAR CHECK INTERRUPT.       89F21990
054F 0 0460              DC       IH020-BASE   STORAGE PROTECT INTERRUPT  89F22000
0550 0 0515              DC       IX200-BASE   B REGISTER PARITY CHECK.   89F22010
0551 0 0444              DC       IG010-BASE   OP CODE CHECK.             89F22020
0552 0 04AB       IXC06  DC       II240-BASE   INTERRUPT ADDRESS.         89F22030
0553 0 04AE       IXC08  DC       II260-BASE   INTERRUPT ADDRESS.         89F22040
0554   0001       IXC10  BSS      1            TEMPORARY STORAGE.         89F22050
0555   0001       IXC12  BSS      1            TEST PATTERN.              89F22060
0556 0 FFFF       IXC14  DC       /FFFF        STORAGE PROTECT SWITCH.    89F22070
0557 0 0B00       IXC18  DC       /0B00        CHANGE SP BIT TO ONE.      89F22080
0558 0 000B       IXC20  DC       /000B        CHANGE P BIT.              89F22090
055A   0000              BSS   E  0            FORCE EVEN BOUNDARY.       89F22100
055A 0 0001       IXC22  DC       1            ONE AND IOCC TO SENSE      89F22110
055B 0 0300              DC       /0300        ILSW.                      89F22120
                         *                                               * 89F22130
                         ************************************************* 89F22140
055C 0 0000       IX100  DC       *-*          ENTRY.                     89F22150
                         *                                                 89F22160
                         * THE LOCATION UNDER TEST FAILED.  THE BAD PATTERN 89F22170
                         * IS AT IIC02.  THE KNOW PATTERN IS AT IXC12.     89F22180
                         * THE GOOD PATTERN HAS ODD PARITY, THE BAD PATTERN 89F22190
                         * HAS EVEN PARITY.                               89F22200
                         *                                                 89F22210
055D 0 4700 0642         BSI   L3 JB010-BASE  FILL KNOWN PATTERN         89F22220
055F 0 C0C6              LD      IIC02        FILL FAILURE PATTERN.       89F22230
0560 0 4700 0657         BSI   L3 KA010-BASE                              89F22240
                         *                                                 89F22250
                         * CHECK IF STORAGE PROTECT BIT SET IN WORD.       89F22260
                         *                                                 89F22270
0562 0 08F7              XIO     IXC22        CHECK ILSW.                 89F22280
0563 0 4820              SKP     Z            SKIP IF OK.                 89F22290
0564 0 70D1              B       WATF2        BRANCH ON MULTIPLE ERRORS.  89F22300
0565 0 D100              STO   1 ZERO         TRY TO STORE ZERO IN        89F22310
0566 0 08F3              XIO     IXC22        ERROR POSITION AND CHECK    89F22320
0567 0 1002              SLA     TWO          FOR STOR. PROT. INTERRUPT.  89F22330
0568 0 4810              SKP     -            SKIP IF INTERRUPT SET.      89F22340
0569 0 7008              B       IX130        BRANCH NO INTERRUPT.        89F22350
056A 0 C0EB              LD      IXC14        WAS THERE SUPPOSED TO BE    89F22360
056B 0 4820              SKP     Z            A STOR. PROT. INTERRUPT.    89F22370
056C 0 7002              B       IX120        BRANCH NOT SET.             89F22380
056D 0 2D40 0000         STS   L1 ZERO,/40     TRY TO RESET STOR. PROT.    89F22390
056F 0           IX120   EQU     *                                        89F22400
056F 0 C200              LD    2 ZERO         SET STORAGE PROTECT BIT     89F22410
0570 0 F0E6              EOR     IXC18        ON, EVEN PARITY.            89F22420
0571 0 7002              B       IX140                                    89F22430
0572 0           IX130   EQU     *                                        89F22440
0572 0 C200              LD    2 ZERO         CHANGE PARITY BIT TO MAKE   89F22450
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0573 0 F0E4              EOR     IXC20        PARITY EVEN.                89F22460
0574 0           IX140   EQU     *                                        89F22470
0574 0 D200              STO   2 ZERO                                     89F22480
0575 0 4700 0807         BSI   L3 PQ010-BASE  TALLEY FAILURES BY BIT.     89F22490
0577 0 403C              BSI     IX600        UPDATE COUNTERS AND LOG.    89F22500
0578 0 4F80 04F7         B     I3 IX100-BASE  RETURN.                     89F22510
                         *                                                 89F22520
                         * B REGISTER PARITY ERROR.                       89F22530
                         *                                                 89F22540
057A 0 0000       IX200  DC       *-*          ENTRY.                     89F22550
057B 0 C0D6              LD      IXC06        BE SURE INTERRUPT ADDRESS   89F22560
057C 0 8301              A     3 ONE          IS CORRECT.                 89F22570
057D 0 F0BC              EOR     IX010                                    89F22580
057E 0 4820              SKP     Z                                        89F22590
057F 0 7003              B       IX300        BRANCH IF IN SEARCH RTN.    89F22600
0580 0 40DB              BSI     IX100        LOG ERROR.                  89F22610
0581 0 4F00 04B6         B     L3 II295-BASE  BRANCH OUT.                 89F22620
                         *                                                 89F22630
                         * PARITY ERROR SEARCH INTERRUPT.                 89F22640
                         *                                                 89F22650
0583 0           IX300   EQU     *                                        89F22660
0583 0 C0CF              LD      IXC08        BE SURE INTERRUPT ADDRESS   89F22670
0584 0 8301              A     3 ONE          IS CORRECT.                 89F22680
0585 0 F0B4              EOR     IX010                                    89F22690
0586 0 4820              SKP     Z            SKIP IF SO.                 89F22700
                         *                                                 89F22710
                         * THE PARITY ERROR IS INTERNAL TO THE SEARCH      89F22720
                         * SUBROUTINE, ABEND.                             89F22730
                         *                                                 89F22740
0587 0 70AE              B       WATF2        BRANCH TO ERROR WAIT.       89F22750
0588 0 C02D              LD      IX610+1      IF EXECUTING RANDOM DATA    89F22760
0589 0 1801              SRA     ONE          PATTERN TEST, GO TO         89F22770
058A 0 4820              SKP     Z            ROUTINE IX700.              89F22780
058B 0 7069              B       IX700                                    89F22790
                         *                                                 89F22800
                         * THE BAD PATTERN IS SAVED IN IXC10.  THE FAILURE 89F22810
                         * ADDRESS IS IN XR1.  THERE IS NO TEST PATTERN.   89F22820
                         * THE BAD PATTERN HAS EVEN PARITY.                89F22830
                         *                                                 89F22840
058C 0           IX305   EQU     *                                        89F22850
058C 0 C85B              LDD     IXC26        PUT FOUR ASTERISKS IN       89F22860
058D 0 DF00 0BD5         STD   L3 SUC88+6-BASE  TEST PATTERN BUFFER.      89F22870
058F 0 C335              LD    3 AAC66-BASE   PUT ADDRS OF FAILURE        89F22880
0590 0 D001              STO     IX310+1      PATTERN BUFFER AREA IN      89F22890
0591 0 6600 0000  IX310  LDX   L2 *-*         XR2, LOAD FAILURE PATTERN   89F22900
0593 0 C0C0              LD      IXC10        AND FILL.                   89F22910
0594 0 4700 0657         BSI   L3 KA010-BASE                              89F22920
0596 0 C09E              LD      IIC34        CHECK FOR STORAGE PROTECT   89F22930
0597 0 1002              SLA     TWO          INTERRUPT.                  89F22940
0598 0 4828              SKP     +Z           SKIP NO SP. INTERRUPT.      89F22950
0599 0 7008              B       IX320        BRANCH TO CHANGE SP. BIT.   89F22960
                         *                                                 89F22970
                         * CHECK FOR SP. PICK.                            89F22980
                         *                                                 89F22990
059A 0 08BF              XIO     IXC22        CHECK FOR INTERRUPTS.       89F23000
059B 0 4820              SKP     Z            SKIP IF NONE.               89F23010
                         *                                                 89F23020
059C 0 7099              B       WATF2        MULTIPLE ERRORS.            89F23030
                         *                                                 89F23040
059D 0 D100              STO   1 ZERO         TRY TO STORE IN ERROR.      89F23050
059E 0 08BB              XIO     IXC22        POSITION AND CHECK FOR      89F23060
059F 0 1002              SLA     TWO          SP. ERROR.                  89F23070
05A0 0 4810              SKP     -            SKIP IF SP. INTERRUPT.      89F23080
05A1 0 7003              B       IX330        BRANCH IF NOT.              89F23090
05A2 0           IX320   EQU     *                                        89F23100
05A2 0 C200              LD    2 ZERO         SET SP. BIT WITHOUT         89F23110
05A3 0 F0B3              EOR     IXC18        SETTING PARITY.             89F23120
05A4 0 7002              B       IX340                                    89F23130
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05A5 0                  IX330 EQU    *                                        89F23140
05A5 0 C200                   LD     2 ZERO       CHANGE PARITY BIT TO SHOW  89F23150
05A6 0 F0B1                   EOR    IXC20        EVEN PARITY.               89F23160
05A7 0                  IX340 EQU    *                                        89F23170
05A7 0 D200                   STO    2 ZERO       UPDATE SP, PARITY STORAGE. 89F23180
05A8 0 C042                   LD     IXC32        INCREMENT PARITY ERROR     89F23190
05A9 0 80B0                   A      IXC22        COUNTER.                   89F23200
05AA 0 D040                   STO    IXC32                                   89F23210
                              *                                               89F23220
                              * IF ERROR ADDRESS IN CORE TEST, SET SWITCH.    89F23230
                              *                                               89F23240
05AB 0 693E                   STX    1 IXC28      CHECK ERROR ADDRESS FOR    89F23250
05AC 0 C03D                   LD     IXC28        INTERNAL RANGE.            89F23260
05AD 0 F301                   EOR    3 ONE                                   89F23270
05AE 0 180C                   SRA    12                                      89F23280
05AF 0 4818                   SKP    +-           SKIP NOT INTERNAL.         89F23290
05B0 0 683B                   STX    0 IXC34      SET INTERNAL PARITY SWITCH 89F23300
05B1 0 4002                   BSI    IX600        UPDATE COUNTERS AND LOG.   89F23310
05B2 0 4F80 0515              B      I3 IX200-BASE  RETURN.                  89F23320
05B4 0 0000             IX600 DC     *-*          ENTRY.                     89F23330
                              *                                               89F23340
                              * XR2 LOAD OPERAND WAS INITIALIZED IN II200.    89F23350
                              *                                               89F23360
05B5 0 6600 0000        IX610 LDX    L2 *-*                                  89F23370
05B7 0 4700 086E              BSI    L3 PR010-BASE  TALLEY FAILURES BY LINE.  89F23380
05B9 0 C033                   LD     IXC38        TALLEY FAILURES BY         89F23390
05BA 0 4700 08C0              BSI    L3 PS010-BASE  PATTERN TEST.            89F23400
05BC 0 C0F9                   LD     IX610+1      TEST VALUE IN XR2.         89F23410
05BD 0 4818                   SKP    +-           SKIP IF INTERRUPT IN TESTS 89F23420
05BE 0 700D                   B      IX650        BRANCH NOT IN PATTERN TEST 89F23430
05BF 0 18D0                   XCH                 SAVE PATTERN ID.           89F23440
05C0 0 C094                   LD     IXC12        PUT CORRECT TEST PATTERN   89F23450
05C1 0 D700 04C1              STO    L3 IIC02-BASE  IN ACCUM.  RESTORE WORD. 89F23460
05C3 0 18D0                   XCH                 SAVE PATTERN, RESTORE ID.  89F23470
05C4 0 F029                   EOR    IXC40        INTERRUPT IN WORST CASE    89F23480
05C5 0 4820                   SKP    Z            PATTERN TEST, SKIP IF SO.  89F23490
05C6 0 7005                   B      IX650        BRANCH NOT TEST FOUR.      89F23500
05C7 0 2D28 0000              STS    L1 ZERO,40   RESET ANY STOR. PROT. BIT. 89F23510
05C9 0 18D0                   XCH                 RESTORE PATTERN TO ERROR   89F23520
05CA 0 D100                   STO    1 ZERO       WORD.                      89F23530
05CB 0 688A                   STX    0 IXC14      RESET STOR. PROT. SWITCH.  89F23540
05CC 0                  IX650 EQU    *                                        89F23550
05CC 0 0F00 002D              XIO    L3 AAC50-BASE  CHECK FOR BYPASSING      89F23560
05CE 0 1802                   SRA    TWO          IMMEDIATE ERROR LOG.       89F23570
05CF 0 4804                   SKP    E            SKIP TO LOG.               89F23580
05D0 0 7012                   B      IX660        BRANCH NO LOG.             89F23590
05D1 0 4700 0674              BSI    L3 KB010-BASE  PUT ADDR. IN LINE BUFFER. 89F23600
05D3 0 C0E2                   LD     IX610+1      CONVERT PATTERN ID TO      89F23610
05D4 0 4700 0437              BSI    L3 IC010-BASE  TWO 1443 ERROR CODES FOR  89F23620
05D6 0 D00F                   STO    IXC24        LOG.                       89F23630
05D7 0 6600 0302              LDX    L2 IXC30     ERROR CODE 32.             89F23640
05D9 0 C012                   LD     IXC34        PARITY IN PROGRAM SWITCH.  89F23650
05DA 0 4820                   SKP    Z            SKIP IF OFF.               89F23660
05DB 0 7201                   MDX    2 ONE        UPDATE ERROR CODE.         89F23670
05DC 0 C00E                   LD     IXC32        MULTIPLE MEMORY SELECTS.   89F23680
05DD 0 4830                   SKP    -Z           SKIP IF OFF.               89F23690
05DE 0 7202                   MDX    2 TWO        UPDATE ERROR CODE.         89F23700
05DF 0 6A07                   STX    2 IXC25      STORE PARITY ERROR CODE.   89F23710
05E0 0 C805                   LDD    IXC24        LOAD ERROR ID.             89F23720
05E1 0 4700 0BE6              BSI    L3 SV010-BASE  LOG ERROR.               89F23730
05E3 0                  IX660 EQU    *                                        89F23740
05E3 0 4F80 054F              B      I3 IX600-BASE  RETURN.                  89F23750
                        ************************************************** 89F23760
                        *                                                * 89F23770
                        * CONSTANTS AND WORK AREAS                       * 89F23780
                        *                                                * 89F23790
                        ************************************************** 89F23800
                        *                                                * 89F23810
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05E6   0001             IXC24 BSS  E 1            STORAGE AREA FOR PARITY    89F23820
05E7   0001             IXC25 BSS    1            CODES.                     89F23830
05E8 0 2C2C             IXC26 DC     /2C2C        FOUR ASTERISKS.            89F23840
05E9 0 2C2C                   DC     /2C2C                                   89F23850
05EA   0001             IXC28 BSS    1            WORK AREA.                 89F23860
0302 0                  IXC30 EQU    /0302        PARITY ERROR CODE 32.      89F23870
05EB 0 FFFF             IXC32 DC     -1           PARITY ERROR COUNTER.      89F23880
05EC   0001             IXC34 BSS    1            INTERNAL PARITY SWITCH.    89F23890
05ED 0 0F5D             IXC38 DC     PXK50-BASE   FAILURE TABLE ADDRESS.     89F23900
05EE 0 0004             IXC40 DC     4            WORST CASE PATTERN TEST ID 89F23910
05EF 0 06E3             IXC42 DC     MA020-BASE   RE-ENTRY, 1443 SUBROUTINE  89F23920
05F0 0 2444             IXC44 DC     /2444        CONSTANT FOR QUAD ADDRESS  89F23930
05F1   0001             IXC46 BSS    1            RANDOM NUMBERS.            89F23940
05F2   0001             IXC48 BSS    1            FOR COMPARISON.            89F23950
05F3   0001             IXC50 BSS    1                                       89F23960
05F4 0 058B             IXC52 DC     IXC46-BASE-1  BASE OF ADDRESS TABLE.    89F23970
                        *                                                  * 89F23980
                        ************************************************** 89F23990
                        *                                                    89F24000
                        * RANDOM DATA PATTERN WAS BEING EXECUTED.           89F24010
                        *                                                    89F24020
                        *                                                    89F24030
05F5 0                  IX700 EQU    *                                       89F24040
05F5 0 6945                   STX    1 IX780+1    COMPARE ERROR OPERAND      89F24050
05F6 0 C044                   LD     IX780+1      ADDRESS TO RANDOM DATA     89F24060
05F7 0 F700 0365              EOR    L3 CEC04-BASE  AREA.  IF PARITY CHECK   89F24070
05F9 0 180C                   SRA    12           IS NOT IN THIS AREA, TREAT 89F24080
05FA 0 4818                   SKP    +-           AS AN UNKNOWN PARITY       89F24090
05FB 0 7006                   B      IX705        ERROR.                     89F24100
05FC 0 C03E                   LD     IX780+1                                 89F24110
05FD 0 F700 0366              EOR    L3 CEC06-BASE                           89F24120
05FF 0 180C                   SRA    12                                      89F24130
0600 0 4820                   SKP    Z                                       89F24140
0601 0 708A                   B      IX305        BRANCH ERROR NOT RANDOM.   89F24150
0602 0                  IX705 EQU    *                                       89F24160
                        *                                                    89F24170
                        * THE PARITY ERROR IS IN THE RANDOM DATA.  THE      89F24180
                        * ADDRESS IS IN XR1 AND IX780+1.  THE CONTENTS OF   89F24190
                        * THE WORD IS AT IXC10.  THE BAD PATTERN HAS EVEN    89F24200
                        * PARITY.                                           89F24210
                        *                                                    89F24220
0602 0 C700 04EF              LD     L3 IXC10-BASE  PUT BAD PATTERN IN       89F24230
0604 0 D700 04C1              STO    L3 IIC02-BASE  IIC02 FOR LOG.           89F24240
0606 0 C0ED                   LD     IXC52        BUILD ABSOLUTE OPERAND     89F24250
0607 0 8301                   A      3 ONE        FOR STORE INSTRUCTION.     89F24260
0608 0 D01B                   STO    IX730+1                                 89F24270
0609 0 6103                   LDX    1 THREE      USE XR1 AS A COUNTER.      89F24280
060A 0 C030                   LD     IX780+1      GET OTHER THREE ADDRESSES. 89F24290
060B 0 4838                   SKP    +-Z          SKIP NEXT INSTRUCTION.     89F24300
060C 0                  IX710 EQU    *                                       89F24310
060C 0 C015                   LD     IX720+1      RESTORE ADDRESS.           89F24320
060D 0 188C                   SRT    12                                      89F24330
060E 0 D00B                   STO    IXC28                                   89F24340
060F 0 1082                   SLT    TWO                                     89F24350
0610 0 1001                   SLA    ONE                                     89F24360
0611 0 1083                   SLT    THREE                                   89F24370
0612 0 1001                   SLA    ONE                                     89F24380
0613 0 1083                   SLT    THREE                                   89F24390
0614 0 1001                   SLA    ONE                                     89F24400
0615 0 1084                   SLT    FOUR                                    89F24410
0616 0 80D9                   A      IXC44                                   89F24420
0617 0 1884                   SRT    FOUR                                    89F24430
0618 0 1801                   SRA    ONE                                     89F24440
0619 0 1883                   SRT    THREE                                   89F24450
061A 0 1801                   SRA    ONE                                     89F24460
061B 0 1883                   SRT    THREE                                   89F24470
061C 0 1801                   SRA    ONE                                     89F24480
061D 0 1882                   SRT    TWO                                     89F24490
061E 0 C0CB                   LD     IXC28
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061F 0 108C                SLT     12                                      89F24500
0620 0 D001                STO     IX720+1     USE ADDRESS TO GET PATTERN  89F24510
0621 0 C400 0000    IX720  LD   L   *-*         AND SAVE FOR COMPARE.       89F24520
0623 0 D500 0000    IX730  STO  L1  *-*                                     89F24530
0625 0 71FF                MDX   1  -1          DECREMENT COUNTER.          89F24540
0626 0 70E5                B       IX710        LOOP.                       89F24550
0627 0 C0C9                LD      IXC46        FIND TWO VALUES THAT        89F24560
0628 0 F0C9                EOR     IXC48        MATCH.  USE THAT AS         89F24570
0629 0 4820                SKP     Z            KNOWN VALUE.                89F24580
062A 0 7002                B       IX740                                    89F24590
062B 0 C0C5                LD      IXC46                                    89F24600
062C 0 700B                B       IX760                                    89F24610
062D 0                     IX740 EQU   *                                    89F24620
062D 0 C0C3                LD      IXC46                                    89F24630
062E 0 F0C4                EOR     IXC50                                    89F24640
062F 0 4820                SKP     Z                                        89F24650
0630 0 7002                B       IX750                                    89F24660
0631 0 C0BF                LD      IXC46                                    89F24670
0632 0 7005                B       IX760                                    89F24680
0633 0                     IX750 EQU   *                                    89F24690
0633 0 C0BE                LD      IXC48                                    89F24700
0634 0 F0BE                EOR     IXC50                                    89F24710
0635 0 4820                SKP     Z                                        89F24720
0636 0 7009                B       WATF4        BRANCH NO MATCH FOUND.      89F24730
0637 0 C0BA                LD      IXC48                                    89F24740
0638 0                     IX760 EQU   *                                    89F24750
0638 0 D700 04F0           STO  L3 IXC12-BASE   SAVE FOR LOG.               89F24760
063A 0 6500 0000    IX780  LDX  L1  *-*         RESTORE XR1.                89F24770
063C 0 4700 04F7           BSI  L3 IX100-BASE   LOG ERROR.                  89F24780
063E 0 4F80 0515           B    I3 IX200-BASE   AND LOG ERROR.              89F24790
0640 0 30F4                WATF4 WAIT  /F4      NO MATCH FOUND.             89F24800
0641 0 70FE                B       WATF4                                    89F24810
                           *                                                89F24820
                           * CAR CHECK INTERNAL INTERRUPT.                  89F24830
                           *                                                89F24840
0642 0 0000                IX800 DC    *-*      ENTRY.                      89F24850
0643 0 C700 0701           LD   L3 MAC01-BASE   CHECK 1443 WRITE SWITCH.    89F24860
0645 0 4818                SKP     +-           SKIP IF 1443 CAR CHECK.     89F24870
0646 0 7009                B       IX810        BRANCH IF FALSE CAR CHECK.  89F24880
                           *                                                89F24890
                           * THERE IS NO ERROR MESSAGE FOR A LEGITAMATE 1443 89F24900
                           * CAR CHECK, BECAUSE IT WOULD DESTROY THE RETURN  89F24910
                           * ADDRESS FROM THE 1443 WRITE SUBROUTINE.         89F24920
                           *                                                89F24930
0647 0 3074                WAT74 WAIT  /74      CAR CHECK WAIT.             89F24940
0648 0 C0A6                LD      IXC42        SET RETURN ADDRESSES TO     89F24950
0649 0 8301                A     3 ONE          RETRY WRITE.                89F24960
064A 0 D700 0476           STO  L3 II010-BASE                               89F24970
064C 0 D700 04D5           STO  L3 IX010-BASE                               89F24980
064E 0 4F80 05DD           B    I3 IX800-BASE   RETURN.                     89F24990
                           *                                                89F25000
                           * FALSE CAR CHECK.                               89F25010
                           *                                                89F25020
0650 0                     IX810 EQU   *                                    89F25030
0650 0 0B2D                XIO   3 AAC50-BASE   CK FOR IMMEDIATE ERROR      89F25040
0651 0 1802                SRA     TWO          LOG.                        89F25050
0652 0 4804                SKP     E            SKIP TO LOG.                89F25060
0653 0 7003                B       IX820        BRANCH NO LOG.              89F25070
0654 0 4700 06DA           BSI  L3 MA010-BASE   WRITE ERROR MESSAGE.        89F25080
0656 0 0C75                DC      MSG09-BASE   MESSAGE.                    89F25090
0657 0                     IX820 EQU   *                                    89F25100
0657 0 0B2D                XIO   3 AAC50-BASE   CK FOR WAIT ON ERROR        89F25110
0658 0 1801                SRA     ONE                                      89F25120
0659 0 4804                SKP     E            SKIP IF OFF.                89F25130
065A 0 3075                WAT75 WAIT  /75      FALSE CAR CHECK WAIT.       89F25140
065B 0 4F80 05DD           B    I3 IX800-BASE   RETURN.                     89F25150
                           *                                                89F25160
                           * AUX CORE ERROR                                 89F25170
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                           *                                                89F25180
065D 0 0000                IXXXX DC    *-*      ENTRY                       89F25190
065E 0 0B2D                XIO   3 AAC50-BASE   CK BYPASS ERROR LOG         89F25200
065F 0 1802                SRA     TWO          *                           89F25210
0660 0 4804                SKP     E            SKIP TO LOG                 89F25220
0661 0 7003                B       IXX20        ELSE BR                     89F25230
0662 0 4700 06DA           BSI  L3 MA010-BASE   LOG ERR MESSAGE             89F25240
0664 0 0CE2                DC      MSG17-BASE   MESSAGE ADDRS               89F25250
0665 0                     IXX20 EQU   *                                    89F25260
0665 0 0B2D                XIO   3 AAC50-BASE   CK WAIT ON ERROR            89F25270
0666 0 1801                SRA     ONE          SKIP IF SW 14 OFF           89F25280
0667 0 4804                SKP     E            *                           89F25290
0668 0 3077                WAT77 DC    /3077    ERROR WAIT                  89F25300
0669 0 4F80 05F8           B    I3 IXXXX-BASE   RETURN                      89F25310
                           ********************************************** 89F25320
                           *                                            * 89F25330
                           * NO INTERRUPT CONDITION                     * 89F25340
                           *                                            * 89F25350
                           ********************************************** 89F25360
                           *                                            * 89F25370
066B 0 0000                IY010 DC    *-*      ENTRY.                      89F25380
066C 0 0B2D                XIO   3 AAC50-BASE   CK BYPASS ERROR            89F25390
066D 0 1802                SRA     TWO          LOG.                        89F25400
066E 0 4804                SKP     E            SKIP TO LOG.                89F25410
066F 0 7003                B       IY020        BRANCH AROUND LOG.          89F25420
0670 0 4700 06DA           BSI  L3 MA010-BASE   LOG ERROR MESSAGE.          89F25430
0672 0 0C68                DC      MSG08-BASE   MESSAGE.                    89F25440
0673 0                     IY020 EQU   *                                    89F25450
0673 0 0B2D                XIO   3 AAC50-BASE CK WAIT ON ERROR             89F25460
0674 0 1801                SRA     ONE          SKIP IF SWITCH              89F25470
0675 0 4804                SKP     E            14 IS OFF.                  89F25480
0676 0 3076                WAT76 WAIT  /76      ERROR WAIT.                 89F25490
0677 0 4F80 0606           B    I3 IY010-BASE   RETURN.                     89F25500
                           ********************************************** 89F25510
                           *                                            * 89F25520
                           * LOG NON INTERRUPT ERRORS                   * 89F25530
                           *                                            * 89F25540
                           ********************************************** 89F25550
                           *                                            * 89F25560
                           * THIS SUBROUTINE LOGS DATA ON NON INTERRUPT  * 89F25570
                           * ERRORS.                                     * 89F25580
                           *                                            * 89F25590
                           * CALL -                                     * 89F25600
                           *                                            * 89F25610
                           *     BSI  L3 JA010-BASE                     * 89F25620
                           *                                            * 89F25630
                           *     XR1 CONTAINS THE ADDRESS OF THE POSITION * 89F25640
                           *     WITH THE ERROR.                        * 89F25650
                           *                                            * 89F25660
                           *     XR2 CONTAINS THE PATTERN ID.           * 89F25670
                           *                                            * 89F25680
                           *     XR3 IS THE PSEUDO BASE REGISTER.       * 89F25690
                           *                                            * 89F25700
                           *                              3/26/69       * 89F25710
                           *                                            * 89F25720
                           ********************************************** 89F25730
                           *                                            * 89F25740
0679 0 0000                JA010 DC    *-*      ENTRY.                      89F25750
067A 0 6A0E                STX   2 JA040+1      SAVE XR2.                   89F25760
067B 0 4700 0BAF           BSI  L3 SU010-BASE   ZERO LINE BUFFER.           89F25770
067D 0 4029                BSI     JB010        FILL KNOWN PATTERN.         89F25780
067E 0 C100                LD    1 ZERO         LOAD AND FILL               89F25790
067F 0 403C                BSI     KA010        FAILURE PATTERN.            89F25800
                           *                                                89F25810
                           * CHECK STORAGE PROTECT BIT IN ERROR WORD.       89F25820
                           *                                                89F25830
0680 0 1810                SRA     16           TRY STORING ZERO ON ERROR   89F25840
0681 0 D100                STO   1 ZERO         WORD.                       89F25850
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0682 0 7005              B       JA040       BRANCH NO INTERRUPT.          89F25860
0683 0 C200              LD    2 ZERO        SET STORAGE PROTECT BIT       89F25870
0684 0 F021              EOR     JAC06       AND CHANGE PARITY BIT TO      89F25880
0685 0 D200              STO   2 ZERO        MAINTAIN ODD PARITY.          89F25890
0686 0 2D40 0000         STS   L1 ZERO,/40   RESET STORAGE PROTECT BIT.    89F25900
0688 0 6600 0000   JA040 LDX   L2 *-*        RESTORE PATTERN ID.           89F25910
068A 0 4700 0807         BSI   L3 PQ010-BASE  TALLEY FAILURES BY BIT.      89F25920
068C 0 4700 086E         BSI   L3 PR010-BASE  TALLEY FAILURES BY LINE.     89F25930
068E 0 C014              LD      JAC02       UPDATE TEST FAILURE           89F25940
068F 0 4700 08C0         BSI   L3 PS010-BASE  STORAGE.                     89F25950
0691 0 0B2D              XIO   3 AAC50-BASE  CK FOR BYPASS                 89F25960
0692 0 1802              SRA     TWO         IMMEDIATE ERROR LOG.          89F25970
0693 0 4804              SKP     E           SKIP TO LOG.                  89F25980
0694 0 7008              B       JA050       BRANCH NO LOG.                89F25990
0695 0 4043              BSI     KB010       PUT ADDR. IN LINE BUFFER.     89F26000
0696 0 C0F2              LD      JA040+1     CONVERT PATTERN ID. TO        89F26010
0697 0 4700 0437         BSI   L3 IC010-BASE  TWO 1443 CHARACTERS AND     89F26020
0699 0 D00A              STO     JAC04       PUT IN ERROR CODE.            89F26030
069A 0 C809              LDD     JAC04                                     89F26040
069B 0 4700 0BE6         BSI   L3 SV010-BASE  LOG ERROR.                  89F26050
069D 0             JA050 EQU     *                                         89F26060
069D 0 0B2D              XIO   3 AAC50-BASE  CK FOR HALT ON ERROR         89F26070
069E 0 1801              SRA     ONE                                       89F26080
069F 0 4804              SKP     E                                         89F26090
                   *                                                       89F26100
06A0 0 3078        WAT78 WAIT    /78         HALT ON ERROR WAIT.           89F26110
                   *                                                       89F26120
06A1 0 4F80 0614         B     I3 JA010-BASE  RETURN.                      89F26130
                   ********************************************************* 89F26140
                   *                                                       * 89F26150
                   * CONSTANTS AND WORK AREAS                              * 89F26160
                   *                                                       * 89F26170
                   ********************************************************* 89F26180
                   *                                                       * 89F26190
06A3 0 0F5D        JAC02 DC      PXK50-BASE  FAILURE TABLE ADDRESS.          89F26200
06A4   0001        JAC04 BSS   E 1           ERROR CODE 21.                89F26210
06A5 0 0201              DC      /0201                                     89F26220
06A6 0 0B0B        JAC06 DC      /0B0B       MASK TO SET STOR. PROT.       89F26230
                   *                        BIT, CHANGE PARITY BIT.       89F26240
                   *                                                       * 89F26250
                   ********************************************************* 89F26260
                   ********************************************************* 89F26270
                   *                                                       * 89F26280
                   * FILL KNOWN PATTERN                                    * 89F26290
                   *                                                       * 89F26300
                   ********************************************************* 89F26310
                   *                                                       * 89F26320
06A7 0 0000        JB010 DC      *-*         ENTRY.                        89F26330
06A8 0 C334              LD    3 AAC64-BASE  PUT ADDRS OF TEST             89F26340
06A9 0 D001              STO     JB020+1     PATTERN BUFFER AREA IN        89F26350
06AA 0 6600 0000   JB020 LDX   L2 *-*        XR2, LOAD TEST PATTERN        89F26360
06AC 0 C700 04F0         LD    L3 IXC12-BASE  AND FILL.                    89F26370
06AE 0 400D              BSI     KA010                                     89F26380
06AF 0 C700 04F1         LD    L3 IXC14-BASE  TEST STORAGE PROTECT SW.     89F26390
06B1 0 4820              SKP     Z           SKIP IF SET.                  89F26400
06B2 0 7003              B       JB030       SKIP NOT ON.                  89F26410
06B3 0 C200              LD    2 ZERO        LOG STORAGE PROTECT BIT       89F26420
06B4 0 F0F1              EOR     JAC06       AND UPDATE PARITY BIT.        89F26430
06B5 0 D200              STO   2 ZERO                                      89F26440
06B6 0             JB030 EQU     *                                         89F26450
06B6 0 C335              LD    3 AAC66-BASE  PUT ADDRS OF FAILURE          89F26460
06B7 0 D001              STO     JB040+1     PATTERN BUFFER AREA IN        89F26470
06B8 0 6600 0000   JB040 LDX   L2 *-*        XR2.                          89F26480
06BA 0 4F80 0642         B     I3 JB010-BASE  RETURN.                      89F26490
                   ********************************************************* 89F26500
                   *                                                       * 89F26510
                   * FILL SUBROUTINE                                       * 89F26520
                   *                                                       * 89F26530
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                   ********************************************************* 89F26540
                   *                                                       * 89F26550
                   * THIS SUBROUTINE FILLS THE LINE BUFFER AREA            * 89F26560
                   * DESIGNATED BY XR2 WITH THE PATTERN IN THE             * 89F26570
                   * ACCUMULATOR.                                          * 89F26580
                   *                                                       * 89F26590
                   * CALL -                                                * 89F26600
                   *                                                       * 89F26610
                   *     BSI  L3 KA010-BASE                                * 89F26620
                   *                                                       * 89F26630
                   *     THE ACCUMULATOR CONTAINS THE WORD TO BE           * 89F26640
                   *     FILLED.                                           * 89F26650
                   *                                                       * 89F26660
                   *     XR1  IS SAVED AND RESTORED.                       * 89F26670
                   *                                                       * 89F26680
                   *     XR2 CONTAINS THE ADDRESS OF THE BUFFER AREA.      * 89F26690
                   *                                                       * 89F26700
                   *     XR3 IS THE PSEUDO BASE REGISTER.                  * 89F26710
                   *                                                         89F26720
                   * UPON EXIT XR2 CONTAINS THE ADDRESS OF THE PARITY      * 89F26730
                   * AND SP BITS.                                          * 89F26740
                   *                                                       * 89F26750
                   *                                                       * 89F26760
                   ********************************************************* 89F26770
                   *                                                       * 89F26780
06BC 0 0000        KA010 DC      *-*         ENTRY.                        89F26790
06BD 0 D014              STO     KAC02       SAVE PATTERN.                 89F26800
06BE 0 6908              STX   1 KA050+1     SAVE XR1.                     89F26810
06BF 0 6188              LDX   1 -120        XR1 POINTS TO LEFT BYTE.      89F26820
06C0 0 C012              LD      KAC04       INITIALIZE LOOP               89F26830
06C1 0 D031              STO     KCC02       AND DIGIT COUNTERS.           89F26840
06C2 0 D031              STO     KCC04                                     89F26850
06C3 0 C00E              LD      KAC02       LOAD PATTERN INTO             89F26860
06C4 0 18D0              RTE     16          Q AND POSITION FIRST BIT.     89F26870
06C5 0 4033              BSI     KC010       LOAD CHARACTERS INTO LINE.    89F26880
06C6 0 6500 0000   KA050 LDX   L1 *-*        RESTORE XR1.                  89F26890
06C8 0 7201              MDX   2 ONE         INCREMENT WORD POINTER.       89F26900
06C9 0 C00A              LD      KAC06       TEST BIT COUNTER FOR          89F26910
06CA 0 4804              SKP     E           EVEN.                         89F26920
06CB 0 7002              B       KA070       BRANCH TO LOAD 00.            89F26930
06CC 0 C00B              LD      KAC14       LOAD 01, EVEN PARITY.         89F26940
06CD 0 7001              B       KA080       SKIP.                         89F26950
06CE 0             KA070 EQU     *                                         89F26960
06CE 0 C008              LD      KAC12       LOAD 00, ODD PARITY.          89F26970
06CF 0             KA080 EQU     *                                         89F26980
06CF 0 D200              STO   2 ZERO        LOAD SP AND PARITY BITS.      89F26990
06D0 0 4F80 0657         B     I3 KA010-BASE  RETURN.                      89F27000
                   ********************************************************* 89F27010
                   *                                                       * 89F27020
                   * CONSTANTS AND WORK AREAS                              * 89F27030
                   *                                                       * 89F27040
                   ********************************************************* 89F27050
                   *                                                       * 89F27060
06D2   0001        KAC02 BSS     1           PATTERN STORAGE.              89F27070
06D3 0 0004        KAC04 DC      4           LOOP COUNT.                   89F27080
06D4   0001        KAC06 BSS     1           BIT COUNTER.                  89F27090
                   *                        RELATIVE BASE ADDRESS OF      89F27100
06D5 0 0BC4        KAC08 DC      SUC86-BASE  LINE BUFFER FILL AREA.        89F27110
06D6 0 0003        KAC10 DC      3           THREE.                        89F27120
06D7 0 0A0A        KAC12 DC      /0A0A       1443 CHARACTERS 00.           89F27130
06D8 0 0A01        KAC14 DC      /0A01       1443 CHARACTERS 01.           89F27140
                   *                                                       * 89F27150
                   ********************************************************* 89F27160
                   ********************************************************* 89F27170
                   *                                                       * 89F27180
                   * LOAD ADDRESS IN LINE BUFFER SUBROUTINE                * 89F27190
                   *                                                       * 89F27200
                   ********************************************************* 89F27210
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                    *                                                 * 89F27220
                    * THIS SUBROUTINE CONVERTS THE ADDRESS IN XR1     * 89F27230
                    * TO A STRING OF 1443 CHARACTERS AND FILLS THEM   * 89F27240
                    * INTO THE LINE BUFFER AT SUC86.                  * 89F27250
                    *                                                 * 89F27260
                    * CALL -                                         * 89F27270
                    *                                                 * 89F27280
                    *     BSI  L3 KB010-BASE                          * 89F27290
                    *                                                 * 89F27300
                    *     XR1 CONTAINS THE ADDRESS.                   * 89F27310
                    *                                                 * 89F27320
                    *     XR2 IS SAVED AND RESTORED.                  * 89F27330
                    *                                                 * 89F27340
                    *     XR3 IS THE PSEUDO BASE REGISTER.            * 89F27350
                    *                                                 * 89F27360
                    *                                  3/12/69        * 89F27370
                    *                                                 * 89F27380
                    ************************************************* 89F27390
                    *                                                 * 89F27400
06D9 0 0000         KB010 DC     *-*        ENTRY.                     89F27410
06DA 0 6A15               STX    2 KB050+1  SAVE XR2 AND ADDRESS.      89F27420
06DB 0 C0F9               LD     KAC08      COMPUTE ABSOLUTE BASE      89F27430
06DC 0 8301               A      3 ONE      ADDRESS OF ADDRESS AREA    89F27440
06DD 0 D001               STO    KB020+1    IN LINE BUFFER AND         89F27450
06DE 0 6600 0000    KB020 LDX    L2 *-*     INITIALIZE XR2.            89F27460
06E0 0 690D               STX    1 KB040+1  SAVE XR1.                  89F27470
06E1 0 6188               LDX    1 -120     XR1 POINTS TO LEFT BYTE.   89F27480
06E2 0 C0F0               LD     KAC04      INITIALIZE LOOP            89F27490
06E3 0 D00F               STO    KCC02      COUNTER.                   89F27500
06E4 0 C0F1               LD     KAC10      INITIALIZE DIGIT           89F27510
06E5 0 D00E               STO    KCC04      COUNTER VALUE.             89F27520
06E6 0 C007               LD     KB040+1    MOVE ADDRESS TO CONVERT    89F27530
06E7 0 18D0               RTE    16         INTO Q.                    89F27540
06E8 0 4010               BSI    KC010      CONVERT AND LOAD CHARS.    89F27550
06E9 0 7201               MDX    2 ONE      UPDATE WORD POINTER.       89F27560
06EA 0 C0E8               LD     KAC04      INITIALIZE DIGIT COUNTER   89F27570
06EB 0 D008               STO    KCC04      FOR LAST FOUR DIGITS.      89F27580
06EC 0 400C               BSI    KC010      CONVERT AND FILL CHARS.    89F27590
                    *                                                   89F27600
                    * CONVERSION DONE.                                  89F27610
                    *                                                   89F27620
06ED 0 6500 0000    KB040 LDX    L1 *-*     RESTORE XR1, ADDRESS.      89F27630
06EF 0 6600 0000    KB050 LDX    L2 *-*     RESTORE XR2.               89F27640
06F1 0 4F80 0674          B      I3 KB010-BASE  RETURN.                89F27650
                    ************************************************* 89F27660
                    *                                                 * 89F27670
                    * LOAD SUBROUTINE                                 * 89F27680
                    *                                                 * 89F27690
                    ************************************************* 89F27700
                    *                                                 * 89F27710
                    * THIS SUBROUTINE IS COMMON TO THE FILL AND LOAD  * 89F27720
                    * ADDRESS SUBROUTINES.                            * 89F27730
                    *                                                 * 89F27740
                    * CALL -                                          * 89F27750
                    *                                                 * 89F27760
                    *     BSI     KC010                               * 89F27770
                    *                                                 * 89F27780
                    *     XR1 POINTS TO THE INITIAL BYTE TO FILL.     * 89F27790
                    *                                                 * 89F27800
                    *     XR2 CONTAINS THE ADDRESS OF THE BUFFER AREA.* 89F27810
                    *                                                 * 89F27820
                    *     XR3 IS THE PSEUDO BASE REGISTER.            * 89F27830
                    *                                                 * 89F27840
                    *     THE WORD TO CONVERT AND FILL IS IN THE Q.   * 89F27850
                    *                                                 * 89F27860
                    *     THE LOOP COUNTER, KCC02, IS ALREADY         * 89F27870
                    *     INITIALIZED.                                * 89F27880
                    *                                                 * 89F27890
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                    *                                  3/12/69      * 89F27900
                    *                                               * 89F27910
                    ************************************************* 89F27920
                    *                                               * 89F27930
                    ************************************************* 89F27940
                    *                                               * 89F27950
                    * CONSTANTS AND WORK AREAS                       * 89F27960
                    *                                               * 89F27970
                    ************************************************* 89F27980
                    *                                               * 89F27990
06F3   0001         KCC02 BSS    1          LOOP COUNTER.              89F28000
06F4   0001         KCC04 BSS    1          VALUE TO PUT IN DIGIT CTR. 89F28010
06F5   0001         KCC06 BSS    1          DIGIT COUNTER.             89F28020
06F6   0001         KCC08 BSS    1          STORAGE AREA FOR BIT.      89F28030
06F7 0 000A         KCC10 DC     /000A      1443 CHARACTER 0.          89F28040
06F8 0 0001         KCC12 DC     1          ONE.                       89F28050
                    *                                               * 89F28060
                    ************************************************* 89F28070
                    *                                               * 89F28080
06F9 0 0000         KC010 DC     *-*        ENTRY.                     89F28090
06FA 0 1810               SRA    16         ZERO BIT COUNTER.          89F28100
06FB 0 D0D8               STO    KAC06                                 89F28110
06FC 0                KC020 EQU  *                                     89F28120
06FC 0 C0F7               LD     KCC04      INITIALIZE THE             89F28130
06FD 0 D0F7               STO    KCC06      DIGIT COUNTER.  3 OR 4.    89F28140
06FE 0                KC030 EQU  *                                     89F28150
06FE 0 1804               SRA    FOUR       CLEAR ACCUMULATOR.         89F28160
06FF 0 1081               SLT    ONE        GET NEXT BIT TO CONVERT.   89F28170
0700 0 D0F5               STO    KCC08      SAVE FOR COUNTING.         89F28180
0701 0 4808               SKP    +          SKIP IF ONE.               89F28190
0702 0 C0F4               LD     KCC10      LOAD CHARACTER ZERO.       89F28200
0703 0 1100               SLA    1 ZERO     LOAD CHARACTER INTO        89F28210
0704 0 EA00               OR     2 ZERO     PROPER WORD AND BYTE       89F28220
0705 0 D200               STO    2 ZERO     POSITION IN BUFFER AREA.   89F28230
0706 0 C0CD               LD     KAC06      UPDATE THE BIT             89F28240
0707 0 80EE               A      KCC08      COUNTER.                   89F28250
0708 0 D0CB               STO    KAC06                                 89F28260
0709 0 C0EB               LD     KCC06      DECREMENT DIGIT COUNTER    89F28270
070A 0 90ED               S      KCC12      AND TEST FOR MORE DIGITS   89F28280
070B 0 4808               SKP    +          TO CONVERT.                89F28290
070C 0 7007               B      KC040      BRANCH NO MORE DIGITS.     89F28300
070D 0 D0E7               STO    KCC06      UPDATE DIGIT COUNTER.      89F28310
070E 0 7100               MDX    1 ZERO     SKIP IF RIGHT BYTE.        89F28320
070F 0 7178               MDX    1 120      MAKE RIGHT BYTE, SKIP.     89F28330
0710 0 7188               MDX    1 -120     MAKE LEFT BYTE, SKIP.      89F28340
0711 0 7001               MDX      *+1      SKIP.                      89F28350
0712 0 7201               MDX    2 ONE      INCREMENT WORD POINTER.    89F28360
0713 0 70EA               B      KC030      LOOP TO CONVERT.           89F28370
                    *                                                   89F28380
                    * DIGIT COUNTER ZERO.                              89F28390
                    *                                                   89F28400
0714 0                KC040 EQU  *                                     89F28410
0714 0 C0DE               LD     KCC02      DECREMENT THE              89F28420
0715 0 90E2               S      KCC12      LOOP COUNTER.              89F28430
0716 0 4808               SKP    +          TEST IF DONE.              89F28440
0717 0 7003               B      KC050      BRANCH IF DONE.            89F28450
0718 0 D0DA               STO    KCC02      UPDATE THE LOOP COUNTER.   89F28460
0719 0 7201               MDX    2 ONE      INCREMENT WORD POINTER.    89F28470
071A 0 70E1               B      KC020      CONVERT MORE DIGITS.       89F28480
                    *                                                   89F28490
                    * CONVERSION DONE.                                 89F28500
                    *                                                   89F28510
071B 0                KC050 EQU  *                                     89F28520
071B 0 4F80 0694          B      I3 KC010-BASE  RETURN.                89F28530
                    ************************************************* 89F28540
                    *                                               * 89F28550
                    * INTERRUPT ADDRESS IN PATTERN TEST              * 89F28560
                    *                                               * 89F28570
```

```
                        ************************************************** 89F28580
                        *                                                * 89F28590
                        * CALL -                                         * 89F28600
                        *                                                * 89F28610
                        *     BSI  L3 KL010-BASE                         * 89F28620
                        *                                                * 89F28630
                        *                                   4/22/69      * 89F28640
                        *                                                * 89F28650
                        ************************************************** 89F28660
                        *                                                * 89F28670
071D 0 0000             KL010 DC      *-*         ENTRY.                   89F28680
071E 0 C700 0476              LD    L3 II010-BASE  SAVE INTERRUPT          89F28690
0720 0 188C                   SRT     12          SAVE ADDRESS BITS 4 - 15.89F28700
0721 0 100C                   SLA     12          RESTORE BITS 0 - 4.      89F28710
0722 0 F301                   EOR   3 ONE         COMPARE INTERRUPT TO     89F28720
0723 0 180C                   SRA     12          PROGRAM RESIDENCE MODULE.89F28730
0724 0 4820                   SKP     Z           SKIP IF IN PROGRAM.      89F28740
0725 0 700A                   B       KL020       BRANCH IF NOT.           89F28750
0726 0 108C                   SLT     12          COMPARE ADDRESS TO HIGH  89F28760
0727 0 B00D                   CMP     KLC02       AND LOW TEST PATTERN     89F28770
0728 0 4838                   SKP     +-Z         ADDRESS LIMITS.          89F28780
0729 0 7006                   B       KL020       BRANCH OUT OF RANGE.     89F28790
072A 0 B00B                   CMP     KLC04                                89F28800
072B 0 7004                   B       KL020       BRANCH OUT OF RANGE.     89F28810
072C 0 1000                   NOP                                          89F28820
072D 0 C700 048D              LD    L3 II060+1-BASE  PUT PATTERN ID. IN    89F28830
072F 0 4838                   SKP     +-Z           XR2 LOAD OPERAND.      89F28840
0730 0                  KL020 EQU     *                                    89F28850
0730 0 1810                   SRA     16                                   89F28860
0731 0 D700 0551              STO   L3 IX610+1-BASE                       89F28870
0733 0 4F80 06B8              B     I3 KL010-BASE  RETURN.                 89F28880
                        ************************************************** 89F28890
                        *                                                * 89F28900
                        * CONSTANTS AND WORK AREAS                       * 89F28910
                        *                                                * 89F28920
                        ************************************************** 89F28930
                        *                                                * 89F28940
0735 0 009B             KLC02 DC      PTEST-AA000                          89F28950
0736 0 0424             KLC04 DC      ETEST-AA000                          89F28960
                        *                                                * 89F28970
                        ************************************************** 89F28980
                        ************************************************** 89F28990
                        *                                                * 89F29000
                        * SPECIAL ENTRY TO WRITE SUBROUTINE              * 89F29010
                        *                                                * 89F29020
                        ************************************************** 89F29030
                        *                                                * 89F29040
0737 0 0000             MA001 DC      *-*         ENTRY.                   89F29050
0738 0 C780 06D2              LD    I3 MA001-BASE  SAVE RELATIVE ADDRESS OF 89F29060
073A 0 D031                   STO     MAC15       MESSAGE IN 1443 IOCC.    89F29070
073B 0 C0FB                   LD      MA001       MAKE ENTRY APPEAR        89F29080
073C 0 D002                   STO     MA010       NORMAL.                  89F29090
073D 0 C02C                   LD      MAC10       LOAD OLD SWITCH SETTING  89F29100
073E 0 7006                   B       MA018       AND ENTER PRINT ROUTINE. 89F29110
                        *                                                * 89F29120
                        ************************************************** 89F29130
                        *                                                * 89F29140
                        * WRITE SUBROUTINE                               * 89F29150
                        *                                                * 89F29160
                        ************************************************** 89F29170
                        *                                                * 89F29180
                        * THIS SUBROUTINE WRITES ON THE 1443 IF DATA     * 89F29190
                        * ENTRY SWITCH 9 IS OFF, AND WRITES ON THE 1816/ * 89F29200
                        * 1053 IF SWITCH 9 IS ON.                        * 89F29210
                        *                                                * 89F29220
                        * THE MESSAGE IS IN 1443 FORMAT.  IF NECESSARY IT * 89F29230
                        * IS CONVERTED TO 1816/1053 CODE.                * 89F29240
                        *                                                * 89F29250
```



```
                        * CALL -                                         * 89F29260
                        *                                                * 89F29270
                        *     BSI  L3 MA010-BASE                         * 89F29280
                        *     DC       MSG-BASE   ABSOLUTE DISPLACEMENT OF * 89F29290
                        *                         MESSAGE.               * 89F29300
                        *                                                * 89F29310
                        *     XR1 IS SAVED AND RESTORED.                 * 89F29320
                        *                                                * 89F29330
                        *     XR2 IS SAVED AND RESTORED.                 * 89F29340
                        *                                                * 89F29350
                        *     XR3 IS THE PSEUDO BASE ADDRESS REGISTER.   * 89F29360
                        *                                                * 89F29370
                        ************************************************** 89F29380
                        *                                                * 89F29390
073F 0 0000             MA010 DC      *-*         ENTRY TO WRITE ROUTINE.  89F29400
0740 0                  MA015 EQU     *                                    89F29410
0740 0 C780 06DA              LD    I3 MA010-BASE  SAVE RELATIVE ADDRESS OF 89F29420
0742 0 D029                   STO     MAC15       MESSAGE IN 1443 IOCC.    89F29430
0743 0 0824                   XIO     MAC05       SENSE DATA SWITCHES.     89F29440
0744 0 D025                   STO     MAC10       SAVE SWITCH SETTING.     89F29450
0745 0                  MA018 EQU     *                                    89F29460
0745 0 1806                   SRA     SIX         DETERMINE I/O DEVICE.    89F29470
0746 0 4804                   SKP     E           SKIP IF 1443.            89F29480
0747 0 7032                   B       MA100       BRANCH IF 1816/1053.     89F29490
0748 0                  MA020 EQU     *                                    89F29500
0748 0 0821                   XIO     MAC10       SENSE 1443 DSW.          89F29510
0749 0 4804                   SKP     E           SKIP IF 1443 READY.      89F29520
074A 0 7019                   B       MA050       BRANCH TO DISPLAY.       89F29530
074B 0 681A                   STX   0 MAC01       SET 1443 WRITE SWITCH ON.89F29540
074C 0 C01F                   LD      MAC15       TEST FOR FUNCTION.       89F29550
074D 0 4810                   SKP     -           SKIP IF SPACE FUNCTION.  89F29560
074E 0 7002                   B       MA025       BRANCH TO WRITE MESSAGE. 89F29570
074F 0 0828                   XIO     MAC50       EXECUTE SPACE.           89F29580
0750 0 7003                   B       MA030       BRANCH TO CONTINUE.      89F29590
0751 0                  MA025 EQU     *                                    89F29600
0751 0 8301                   A     3 ONE         COMPUTE ABSOLUTE ADDRESS 89F29610
0752 0 D019                   STO     MAC15       OF MESSAGE.              89F29620
0753 0 0818                   XIO     MAC15       WRITE.                   89F29630
0754 0                  MA030 EQU     *                                    89F29640
0754 0 0819                   XIO     MAC20       SENSE 1443 DSW, NO RESET.89F29650
0755 0 1002                   SLA     TWO         TEST PRINTER COMPLETE.   89F29660
0756 0 4810                   SKP     -           SKIP WHEN DONE.          89F29670
0757 0 70FC                   B       MA030       LOOP TILL PRINTER DONE.  89F29680
0758 0 4802                   SKP     C           SKIP NO ERROR, CARRY OFF.89F29690
0759 0 7007                   B       MA040       BRANCH TO ERROR ROUTINE. 89F29700
075A 0 1810                   SRA     16          RESET 1443 WRITE         89F29710
075B 0 D00A                   STO     MAC01       SWITCH.                  89F29720
075C 0                  MA036 EQU     *                                    89F29730
075C 0 C0E2                   LD      MA010       INCREMENT RETURN         89F29740
075D 0 8012                   A       MAC25       ADDRESS AND UPDATE       89F29750
075E 0 D0E0                   STO     MA010       IT.                      89F29760
075F 0 4F80 06DA              B     I3 MA010-BASE RETURN.                  89F29770
0761 0                  MA040 EQU     *           ERROR ROUTINE.           89F29780
0761 0 3030             WAT30 WAIT    /30         ERROR WAIT.              89F29790
0762 0 0807                   XIO     MAC10       RESET 1443 DSW.          89F29800
                        *                         START OVER AGAIN, MAY USE89F29810
0763 0 70DC                   B       MA015       1816/1053.               89F29820
0764 0                  MA050 EQU     *           1443 NOT READY DISPLAY.  89F29830
0764 0 3031             WAT31 WAIT    /31         NOT READY WAIT.          89F29840
0765 0 70DA                   B       MA015       RETURN TO TRY AGAIN.     89F29850
                        ************************************************** 89F29860
                        *                                                * 89F29870
                        * CONSTANTS AND WORK AREAS                       * 89F29880
                        *                                                * 89F29890
                        ************************************************** 89F29900
                        *                                                * 89F29910
0766 0 0000             MAC01 DC      /0000       1443 WRITE SWITCH, OFF.  89F29920
0768   0001             MAC05 BSS   E 1           FORCE.EVEN BOUNDARY FOR  89F29930
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0769 0 0740              DC      /0740      IOCC TO SENSE DES.                89F29940
076A 0 0000    MAC10     DC      /0000      SENSE 1443 DSW AND                89F29950
076B 0 3701              DC      /3701      RESET.                            89F29960
076C 0 0000    MAC15     DC      *-*                                          89F29970
076D 0 3500              DC      /3500      IOCC TO WRITE AT 1443.            89F29980
                         *                                                    89F29990
                         * MAC20 IS ALSO WORD COUNT STORAGE.                  89F30000
                         *                                                    89F30010
076E   0001    MAC20     BSS     1          SENSE 1443 DSW WITHOUT            89F30020
076F 0 3700              DC      /3700      RESET.                            89F30030
                         *                                                    89F30040
                         * MAC25 IS ALSO THE CONSTANT OF ONE.                 89F30050
                         *                                                    89F30060
0770 0 0001    MAC25     DC      1          SENSE FIRST PRINTER DSW           89F30070
0771 0 0F03              DC      /0F03      WITH RESET.                       89F30080
                         *                                                    89F30090
                         * MAC30 IS ALSO AN 1816/1053 CARRIER RETURN.         89F30100
                         *                                                    89F30110
0772 0 8100    MAC30     DC      /8100      SENSE FIRST PRINTER DSW           89F30120
0773 0 0F02              DC      /0F02      WITHOUT RESET.                    89F30130
                         *                                                    89F30140
                         * THE ADDRESS OF MAC40 IS CALCULATED AND STORED IN   89F30150
                         * MAC35.                                             89F30160
                         *                                                    89F30170
0774 0 0000    MAC35     DC      *-*        WRITE IOCC TO FIRST               89F30180
0775 0 0902              DC      /0902      1816 OR 1053.                     89F30190
0776   0001    MAC40     BSS     1          CHARACTER TO PRINT.               89F30200
0777 0 0711    MAC45     DC      MAC40-BASE  RELATIVE ADDRESS OF MAC40        89F30210
0778 0 2100    MAC50     DC      /2100      IOCC TO SPACE                     89F30220
0779 0 3400              DC      /3400      IMMEDIATE.                        89F30230
                         *                                                  * 89F30240
                         ****************************************************** 89F30250
                         ****************************************************** 89F30260
                         *                                                  * 89F30270
                         * WRITE ROUTINE FOR 1816/1053.                     * 89F30280
                         *                                                  * 89F30290
                         ****************************************************** 89F30300
                         *                                                  * 89F30310
077A 0         MA100     EQU     *                                            89F30320
077A 0 6923              STX   1 MA145+1    SAVE XR1.                         89F30330
077B 0 6A20              STX   2 MA140+1    SAVE XR2.                         89F30340
077C 0 C301              LD    3 ONE        COMPUTE ABSOLUTE ADDRESS          89F30350
077D 0 80F9              A       MAC45      OF CHARACTER BUFFER AND           89F30360
077E 0 D0F5              STO     MAC35      STORE IN IOCC.                    89F30370
077F 0 C0EC              LD      MAC15      INITIALIZE XR1                    89F30380
0780 0 4808              SKP     +          SKIP IF MESSAGE TO WRITE.         89F30390
0781 0 7018              B       MA130      BRANCH TO SPACE FUNCTION.         89F30400
0782 0 8301              A     3 ONE        COMPUTE ABSOLUTE ADDRESS          89F30410
0783 0 D001              STO     MA105+1    TO POINT TO I/O                   89F30420
0784 0 6500 0000 MA105   LDX   L1 *-*      BUFFER AREA.                      89F30430
0786 0 C100              LD    1 ZERO       GET WORD COUNT.                   89F30440
0787 0 D0E6              STO     MAC20      AND SAVE.                         89F30450
0788 0 7101              MDX   1 ONE        BUMP XR1 TO FIRST WORD.           89F30460
0789 0 6288              LDX   2 -120       XR2 POINTS TO LEFT BYTE.          89F30470
078A 0 4015              BSI     MA150      TEST FOR PRINTER READY.           89F30480
078B 0         MA110     EQU     *                                            89F30490
078B 0 402B              BSI     MM010      CONVERT CHARACTER.                89F30500
078C 0 D0E9              STO     MAC40      CHARACTER TO I/O BUFFER.          89F30510
078D 0 08E6              XIO     MAC35      WRITE.                            89F30520
078E 0 4011              BSI     MA150      TEST FOR PRINTER DONE.            89F30530
078F 0 7200              MDX   2 ZERO       TEST RIGHT BYTE, SKIP YES.        89F30540
0790 0 7278              MDX   2 120        MAKE RIGHT BYTE, SKIP.            89F30550
0791 0 7288              MDX   2 -120       MAKE LEFT BYTE, SKIP.             89F30560
0792 0 70F8              B       MA110      PRINT RIGHT BYTE.                 89F30570
0793 0 C0DA              LD      MAC20      DECREMENT WORD COUNTER.           89F30580
0794 0 90DB              S       MAC25      AND TEST.                         89F30590
0795 0 4808              SKP     +          SKIP NOT ZERO YET.                89F30600
0796 0 7003              B       MA130      DONE PRINTING LINE.               89F30610
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0797 0 0D06              STO     MAC20      UPDATE COUNTER.                   89F30620
0798 0 7101              MDX   1 ONE        BUMP WORD POINTER.                89F30630
0799 0 70F1              B       MA110      PRINT NEXT CHARACTER.             89F30640
                         *                                                    89F30650
                         * DONE PRINTING.                                    89F30660
                         *                                                    89F30670
079A 0         MA130     EQU     *                                            89F30680
079A 0 4015              BSI     MA200      RETURN CARRIAGE.                  89F30690
079B 0 6600 0000 MA140   LDX   L2 *-*      RESTORE XR2                       89F30700
079D 0 6500 0000 MA145   LDX   L1 *-*      RESTORE XR1.                      89F30710
079F 0 70BC              B       MA036      BRANCH TO EXIT ROUTINE.           89F30720
                         *                                                    89F30730
                         * PRINTER STATUS LOOP                                89F30740
                         *                                                    89F30750
07A0 0 0000    MA150     DC      *-*                                          89F30760
07A1 0 08D0              XIO     MAC30      SENSE DSW WITHOUT RESET.          89F30770
07A2 0 1004              SLA     FOUR       TEST FOR BUSY.                    89F30780
07A3 0 4828              SKP     +Z         SKIP NOT BUSY.                    89F30790
07A4 0 70FC              B       MA150+1    LOOP IF BUSY.                     89F30800
07A5 0         MA155     EQU     *                                            89F30810
07A5 0 08CA              XIO     MAC25      SENSE DSW WITH RESET AND          89F30820
07A6 0 1806              SRA     SIX        TEST FOR PARITY ERROR.            89F30830
07A7 0 4804              SKP     E          SKIP IF OFF.                      89F30840
07A8 0 7005              B       MA180      BRANCH TO WAIT.                   89F30850
07A9 0 1804              SRA     FOUR       TEST FOR PRINTER NOT READY        89F30860
07AA 0 4804              SKP     E          SKIP IF READY.                    89F30870
07AB 0 7002              B       MA180      BRANCH TO WAIT.                   89F30880
07AC 0 4F80 073B         B     I3 MA150-BASE RETURN.                          89F30890
07AE 0         MA180     EQU     *                                            89F30900
07AE 0 3032    WAT32     WAIT    /32        NOT READY OR ERROR WAIT.          89F30910
07AF 0 70F5              B       MA155      RETURN TO SENSE READY.            89F30920
                         *                                                    89F30930
                         * RETURN CARRIAGE                                    89F30940
                         *                                                    89F30950
07B0 0 0000    MA200     DC      *-*                                          89F30960
07B1 0 C0C0              LD      MAC30      LOAD CARRIER RETURN               89F30970
07B2 0 D0C3              STO     MAC40      INTO CHARACTER BUFFER.            89F30980
07B3 0 08C0              XIO     MAC35      WRITE.                            89F30990
07B4 0 40EB              BSI     MA150      TEST STATUS.                      89F31000
07B5 0 4F80 074B         B     I3 MA200-BASE RETURN.                          89F31010
                         ****************************************************** 89F31020
                         *                                                  * 89F31030
                         * 1816/1053 CHARACTER CONVERSION SUBROUTINE        * 89F31040
                         *                                                  * 89F31050
                         ****************************************************** 89F31060
                         *                                                  * 89F31070
                         * THIS SUBROUTINE CONVERTS A CHARACTER IN 1443     * 89F31080
                         * CODE TO AN 1816 OR 1053 CHARACTER.               * 89F31090
                         *                                                  * 89F31100
                         * CALL -                                           * 89F31110
                         *                                                  * 89F31120
                         *     BSI     MM010                                * 89F31130
                         *                                                  * 89F31140
                         *     XR1 AND XR2 INDICATE THE CHARACTER TO        * 89F31150
                         *     CONVERT.                                     * 89F31160
                         *                                                  * 89F31170
                         *     XR3 IS SAVED AND RESTORED.                   * 89F31180
                         *                                                  * 89F31190
                         ****************************************************** 89F31200
                         *                                                  * 89F31210
07B7 0 0000    MM010     DC      *-*                                          89F31220
07B8 0 6B0F              STX   3 MM050+1    SAVE BASE REGISTER.               89F31230
07B9 0 6308              LDX   3 EIGHT      SET SHIFT COUNT TO 8.             89F31240
07BA 0 C100              LD    1 ZERO       GET CHARACTER TO PRINT.           89F31250
07BB 0 1A00              SRA   2 ZERO       IN RIGHT BYTE OF ACC.             89F31260
07BC 0 E00F              AND     MMC10                                        89F31270
                         *                   SKIP IF CHARACTER IS LEFT        89F31280
07BD 0 4804              SKP     E          BYTE IN TABLE.                    89F31290
```

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                        *                          LEFT BYTE, RETURN SHIFT
07BE 0 73F8                   MDX    3 -8          COUNT TO 0, SKIP.
                        *                          RIGHT BYTE, LEAVE SHIFT
07BF 0 1000                   NOP                  COUNT AT 8.
07C0 0 1801                   SRA      ONE         PLACE 5 HI BITS IN ACC.
                        *
                        * COMPUTE ABSOLUTE ADDRESS OF CONVERTED CHARACTERS.
                        *
07C1 0 8006                   A        MM050+1     ADD CONTENTS OF BASE
07C2 0 8008                   A        MMC05       REGISTER AND DISPLACEMENT
07C3 0 D001                   STO      MM030+1     STORE IN LOAD INSTRUCTION
07C4 0 C400 0000        MM030 LD    L  *-*         LOAD1816/1053 CHARACTERS
07C6 0 1300                   SLA    3 ZERO        SHIFT TO LEFT BYTE.
                        *
                        * IF THE RIGHT BYTE IS EXTRANEOUS, IT IS NOT MASKED
                        *
07C7 0 6700 0000        MM050 LDX   L3 *-*         RESTORE XR3.
07C9 0 4F80 0752              B     I3 MM010-BASE RETURN.
                        ***************************************************
                        *                                                 *
                        * CONSTANTS AND WORK AREAS                        *
                        *                                                 *
                        ***************************************************
                        *                                                 *
                        *                          DISPLACEMENT OF TABLE
07CB 0 0768             MMC05 DC       T1053-BASE T1053.
07CC 0 00FF             MMC10 DC       /00FF       MASK OFF LEFT BYTE.
07CD 0                  T1053 EQU      *           1816/1053 CHARACTER TABLE
07CD 0 FC21                   DC       /FC21       1, SPACE
07CE 0 DCD8                   DC       /DCD8       32
07CF 0 F4F0                   DC       /F4F0       54
07D0 0 D4D0                   DC       /D4D0       76
07D1 0 E0E4                   DC       /E0E4       98
07D2 0 C2C4                   DC       /C2C4       =0
07D3 0 E604                   DC       /E604       '@
07D4 0 8646                   DC       /8646
07D5 0 BCDA                   DC       /BCDA       /+
07D6 0 9E9A                   DC       /9E9A       TS
07D7 0 B6B2                   DC       /B6B2       VU
07D8 0 9692                   DC       /9692       XW
07D9 0 A2A6                   DC       /A2A6       ZY
07DA 0 8006                   DC       /8006       ,%
07DB 0 BEFE                   DC       /BEFE        ( .
07DC 0 E282                   DC       /E282       '
07DD 0 7E84                   DC       /7E84       J-
07DE 0 5E5A                   DC       /5E5A       LK
07DF 0 7672                   DC       /7672       NM
07E0 0 5652                   DC       /5652       PO
07E1 0 6266                   DC       /6266       RQ
07E2 0 40C0                   DC       /40C0       $#
07E3 0 42D6                   DC       /42D6       .*
07E4 0 F2D2                   DC       /F2D2       .
07E5 0 3E44                   DC       /3E44       A&
07E6 0 1E1A                   DC       /1E1A       CB
07E7 0 3632                   DC       /3632       ED
07E8 0 1612                   DC       /1612       GF
07E9 0 2226                   DC       /2226       IH
07EA 0 0021                   DC       /0021       . , LOZ
07EB 0 02F6                   DC       /02F6       C)
                        *                                                 *
                        ***************************************************
                        ***************************************************
                        *                                                 *
                        * EXPLICIT RELOCATION ROUTINE                     *
                        *                                                 *
                        ***************************************************
                        *                                                 *
                        * THIS SUBROUTINE WILL RELOCATE THE CORE FUNCTION *
```



```
                        * TEST TO THE HI 4K OF AN EXPLICITLY DEFINED BSM. *
                        *                                                 *
                        * CALL -                                          *
                        *                                                 *
                        *      BSC  L3 NA010-BASE                         *
                        *                                                 *
                        *      THE ACCUMULATOR CONTAINS THE BSM NUMBER    *
                        *      TO BE RELOCATED TO - 1 TO 8.               *
                        *                                                 *
                        *      XR1 AND XR2 ARE NOT USED.                  *
                        *                                                 *
                        *      XR3 IS THE PSEUDO BASE REGISTER.           *
                        *                                                 *
                        ***************************************************
                        *                                                 *
07EC 0                  NA010 EQU      *
07EC 0 9024                   S        NAC02       COMPUTE BSM TO MOVE TO
07ED 0 100D                   SLA      13          MOVE TO HI HALF BYTE.
07EE 0 E823                   OR       NAC04       ADD BIT 3.
07EF 0 D023                   STO      NAC06       SAVE.
07F0 0 C301                   LD     3 ONE         GET BSM ADDRESS OF
07F1 0 E022                   AND      NAC08       MODULE THAT PROGRAM IS IN.
07F2 0 F020                   EOR      NAC06       COMPARE TO ONE WANTED.
07F3 0 4818                   SKP      +-          SKIP NOT EQUAL.
07F4 0 7002                   B        NA020       BRANCH IF PROGRAM IS HERE.
07F5 0 C01D                   LD       NAC06       LOAD BITS 0-3 OF ADDRESS.
07F6 0 4006                   BSI      NA100       EXECUTE MOVE ROUTINE.
07F7 0                  NA020 EQU      *
07F7 0 C01B                   LD       NAC06       GENERATE ENTRY ADDRESS.
07F8 0 801D                   A        NAC12
07F9 0 D001                   STO      NA030+1
07FA 0 4400 0000        NA030 BSI   L  *-*         BRANCH TO RELOCATED RTN.
07FC 0 001C                   DC       AA100-BASE  RE-ENTER AT AA100.
                        ***************************************************
                        *                                                 *
                        * CORE RELOCATE ROUTINE                           *
                        *                                                 *
                        ***************************************************
                        *                                                 *
                        * THIS SUBROUTINE MOVES THE FUNCTION TEST TO THE  *
                        * INDICATED 4K BLOCK.                             *
                        *                                                 *
                        * CALL -                                          *
                        *                                                 *
                        *      BSI  L3 NA100-BASE                         *
                        *                                                 *
                        *      THE ACCUMULATOR CONTAINS BITS 0-3 OF THE   *
                        *      *TO* ADDRESS.                              *
                        *                                                 *
                        *      XR1 IS SAVED AND RESTORED.                 *
                        *                                                 *
                        *      XR2 IS NOT USED.                           *
                        *                                                 *
                        *      XR3 IS THE PSEUDO BASE REGISTER.           *
                        *                                                 *
                        ***************************************************
                        *                                                 *
07FD 0 0000             NA100 DC       *-*
07FE 0 E816                   OR       NAC10       GENERATE FULL ADDRESS.
07FF 0 D00A                   STO      NA120+1     INITIALIZE STORE INSTR.
0800 0 690D                   STX    1 NA130+1     SAVE XR1.
0801 0 6500 F012              LDX   L1 NAC14       NUMBER OF WORDS TO MOVE.
0803 0 C301                   LD     3 ONE         GET BASE AND DETERMINE
0804 0 E00F                   AND      NAC08       BASE ADDRESS FOR
0805 0 E80F                   OR       NAC10       MOVE.
0806 0 D001                   STO      NA110+1     INITIALIZE STORE INSTR.
0807 0 CD00 0000        NA110 LDD   L1 *-*         RELOCATE CORE TEST
0809 0 DD00 0000        NA120 STD   L1 *-*         ROUTINE.
```

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080B 0 7102              MDX   1 TWO        INCREMENT INDEX REGISTER.  89F32660
080C 0 70FA              B     NA110        CONTINUE MOVE.             89F32670
080D 0 6500 0000   NA130 LDX   L1 *-*       RESTORE XR1.               89F32680
080F 0 4F80 0798         B     I3 NA100-BASE  RETURN.                  89F32690
                         *                                            * 89F32700
                         ********************************************** 89F32710
                         *                                            * 89F32720
                         * CONSTANTS AND WORK AREAS                    * 89F32730
                         *                                            * 89F32740
                         ********************************************** 89F32750
                         *                                            * 89F32760
0811 0 0001              NAC02 DC      1          INCREMENT.             89F32770
0812 0 1000              NAC04 DC      /1000      BIT 3, 4K.             89F32780
0813   0001              NAC06 BSS     1          TEMPORARY STORAGE.     89F32790
0814 0 F000              NAC08 DC      /F000      MASK TO LEAVE HI 4 BITS. 89F32800
0815 0 0FFE              NAC10 DC      /0FFE      HI ADDRESS FOR MOVE.   89F32810
                         *                        DISPLACEMENT FOR       89F32820
0816 0 007A              NAC12 DC      AA080-AA000  ENTRY ADDRESS OF AA100. 89F32830
F012 0                   NAC14 EQU     -4078      WORD COUNT FOR MOVE RTN. 89F32840
                         *                                            * 89F32850
                         ********************************************** 89F32860
                         ********************************************** 89F32870
                         *                                            * 89F32880
                         * OSCILLATE RELOCATION ROUTINE                * 89F32890
                         *                                            * 89F32900
                         ********************************************** 89F32910
                         *                                            * 89F32920
                         * THIS SUBROUTINE RELOCATES THE CORE FUNCTION * 89F32930
                         * PROGRAM WITHIN A BSM.  IF THE PROGRAM IS IN THE * 89F32940
                         * HI 4K, IT IS MOVED TO THE LOW 4K.  IF IT IS IN * 89F32950
                         * THE LOW 4K, IT IS MOVED TO THE HI 4K.       * 89F32960
                         *                                            * 89F32970
                         * CALL -                                     * 89F32980
                         *                                            * 89F32990
                         *     BSI  L3 NB010-BASE                     * 89F33000
                         *                                            * 89F33010
                         *     XR1 AND XR2 ARE NOT USED.              * 89F33020
                         *                                            * 89F33030
                         *     XR3 IS THE PSEUDO BASE REGISTER.       * 89F33040
                         *                                            * 89F33050
                         *     UPON EXIT, THE ACCUMULATOR HAS BITS 0-3 OF * 89F33060
                         *     THE NEW PROGRAM ADDRESS.               * 89F33070
                         *                                            * 89F33080
                         ********************************************** 89F33090
                         *                                            * 89F33100
0817 0 0000              NB010 DC      *-*        ENTRY.                 89F33110
0818 0 C301                    LD    3 ONE        CHANGE ADDRESS         89F33120
0819 0 E0FA                    AND     NAC08      BIT 3.                 89F33130
081A 0 F0F7                    EOR     NAC04      FOR REGULAR BSM.       89F33140
081B 0 D0F7                    STO     NAC06      SAVE                   89F33150
081C 0 40E0                    BSI     NA100      EXECUTE MOVE ROUTINE.  89F33160
081D 0 C0F5                    LD      NAC06      RETURN WITH BITS 0-3 OF 89F33170
081E 0 4F80 07B2               B     I3 NB010-BASE  NEW ADDRESS IN ACC.   89F33180
                         ********************************************** 89F33190
                         *                                            * 89F33200
                         * MOVE TO NEXT BSM RELOCATION ROUTINE         * 89F33210
                         *                                            * 89F33220
                         ********************************************** 89F33230
                         *                                            * 89F33240
                         * THIS SUBROUTINE RELOCATES THE CORE FUNCTION * 89F33250
                         * PROGRAM TO THE HIGH 4K OF THE NEXT BSM.     * 89F33260
                         *                                            * 89F33270
                         * CALL -                                     * 89F33280
                         *                                            * 89F33290
                         *     BSI  L3 NC010-BASE                     * 89F33300
                         *                                            * 89F33310
                         *     XR1 AND XR2 ARE NOT USED.              * 89F33320
                         *                                            * 89F33330
```



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                         *     XR3 IS THE PSEUDO BASE REGISTER.       * 89F33340
                         *                                            * 89F33350
                         *     UPON EXIT, THE ACCUMULATOR HAS BITS 0-3 OF * 89F33360
                         *     THE NEW PROGRAM ADDRESS.               * 89F33370
                         *                                            * 89F33380
                         ********************************************** 89F33390
                         *                                            * 89F33400
0820 0 0000              NC010 DC      *-*        ENTRY.                 89F33410
0821 0 C301                    LD    3 ONE        GET BASE ADDRESS OF CFT. 89F33420
0822 0 180D                    SRA     13         ADDRESS BITS 0-2 ONLY IN 89F33430
0823 0 80ED                    A       NAC02      ACCUMULATOR.  INCREMENT 89F33440
0824 0 100D                    SLA     13         RESTORE TO 0-2.        89F33450
0825 0 E8EC                    OR      NAC04      ADD BIT 3.             89F33460
0826 0 D0EC                    STO     NAC06      SAVE                   89F33470
0827 0 40D5                    BSI     NA100      EXECUTE MOVE.          89F33480
0828 0 C0EA                    LD      NAC06      RETURN WITH BITS 0-4 OF 89F33490
0829 0 4F80 07BB               B     I3 NC010-BASE  NEW ADDRESS IN ACC.   89F33500
                         ********************************************** 89F33510
                         *                                            * 89F33520
                         * MOVE ANYWHERE RELOCATION ROUTINE            * 89F33530
                         *                                            * 89F33540
                         ********************************************** 89F33550
                         *                                            * 89F33560
                         * THIS SUBROUTINE RELOCATES THE CORE FUNCTION * 89F33570
                         * PROGRAM DEPENDING ON SEVERAL FACTORS.  IF THE * 89F33580
                         * PROGRAM IS IN THE HI 4K OF A BSM, IT WILL BE * 89F33590
                         * RELOCATED TO THE LOW 4K.  IF IT IS ALREADY IN * 89F33600
                         * THE LOW 4K, IT WILL BE RELOCATED TO ANOTHER BSM. * 89F33610
                         *                                            * 89F33620
                         * CALL -                                     * 89F33630
                         *                                            * 89F33640
                         *     BSI  L3 ND010-BASE                     * 89F33650
                         *                                            * 89F33660
                         *     XR1 AND XR2 ARE NOT USED.              * 89F33670
                         *                                            * 89F33680
                         *     XR3 IS THE PSEUDO BASE REGISTER.       * 89F33690
                         *                                            * 89F33700
                         *     UPON EXIT THE ACCUMULATOR HAS BITS 0-3 OF * 89F33710
                         *     THE NEW PROGRAM ADDRESS.               * 89F33720
                         *                                            * 89F33730
                         ********************************************** 89F33740
                         *                                            * 89F33750
082B 0 0000              ND010 DC      *-*        ENTRY.                 89F33760
082C 0 C301                    LD    3 ONE        IS PROGRAM IN HIGH 4K. 89F33770
082D 0 1003                    SLA     THREE      TEST BIT 3.            89F33780
082E 0 4810                    SKP     -          SKIP IF IN HIGH 4K.    89F33790
082F 0 7003                    B       ND020      BRANCH TO RELOCATE.    89F33800
0830 0 40E6                    BSI     NB010      OSCILLATE.             89F33810
0831 0                   ND015 EQU     *                                 89F33820
0831 0 4F80 07C6               B     I3 ND010-BASE  RETURN.              89F33830
0833 0                   ND020 EQU     *          MUST MOVE TO ANOTHER BSM. 89F33840
0833 0 C301                    LD    3 ONE        TEST IF IN LAST BSM.   89F33850
0834 0 180D                    SRA     13         DETERMINE RESIDENT BSM. 89F33860
0835 0 80DB                    A       NAC02      INCREMENT.             89F33870
0836 0 9700 FFF5               S     L3 AAC04-BASE  COMPARE TO HIGHEST BSM. 89F33880
0838 0 4810                    SKP     -          SKIP IF NOT IN LAST BSM. 89F33890
0839 0 7002                    B       ND030      BRANCH, MOVE TO FIRST BSM. 89F33900
083A 0 40E5                    BSI     NC010      MOVE TO NEXT BSM.      89F33910
083B 0 70F5                    B       ND015      RETURN.                89F33920
083C 0                   ND030 EQU     *                                 89F33930
083C 0 C0D5                    LD      NAC04      LOAD BASE ADDRESS FOR 8K. 89F33940
083D 0 D0D5                    STO     NAC06      SAVE.                  89F33950
083E 0 40BE                    BSI     NA100      EXECUTE MOVE ROUTINE.  89F33960
083F 0 C0D3                    LD      NAC06      RETURN WITH BITS 0-4 OF 89F33970
0840 0 70F0                    B       ND015      NEW ADDRESS IN ACC.    89F33980
                         ********************************************** 89F33990
                         *                                            * 89F34000
                         * THIS SUBROUTINE DETERMINES WHERE TO RELOCATE * 89F34010
```

```
                        * THE CORE FUNCTION TEST.                                * 89F34020
                        *                                                        * 89F34030
                        * CALL -                                                 * 89F34040
                        *                                                        * 89F34050
                        *     BSI  L3 NE010-BASE                                 * 89F34060
                        *     DC      XXXXX-BASE  OSCILLATE RE-ENTRY             * 89F34070
                        *                         ADDRESS PARAMETER.             * 89F34080
                        *     DC      XXXXX-BASE  TEST COMPLETE RE-ENTRY         * 89F34090
                        *                         ADDRESS PARAMETER.             * 89F34100
                        *                                                        * 89F34110
                        *     XR1 AND XR2 ARE NOT USED.                          * 89F34120
                        *                                                        * 89F34130
                        *     XR3 IS THE PSEUDO BASE REGISTER.                   * 89F34140
                        *                                                        * 89F34150
                        *                                    4/9/69              * 89F34160
                        *                                                        * 89F34170
                        ********************************************************** 89F34180
                        *                                                        * 89F34190
0841 0 0000             NE010 DC      *-*          ENTRY.                        89F34200
0842 0 1082                   SLT     TWO          RESTORE HIGH/LOW FLAGS.       89F34210
0843 0 4804                   SKP     E            SKIP IF IN LOW HALF OF BSM    89F34220
0844 0 7005                   B       NE020        OSCILLATE IF IN HIGH HALF.    89F34230
0845 0 1801                   SRA     ONE          TEST IF IN LAST BSM TOO.      89F34240
0846 0 4804                   SKP     E            SKIP IF NOT LAST.             89F34250
0847 0 700B                   B       NE100        BRANCH LOW, LAST.             89F34260
                        *                                                        89F34270
                        * FULL, NORMAL TEST.                                     89F34280
                        * MOVE CORE TEST TO NEXT BSM.                            89F34290
                        *                                                        89F34300
0848 0 40D7                   BSI     NC010        MOVE TO NEXT BSM.             89F34310
0849 0 7001                   B       NE030        GO TO RE-ENTER ROUTINE.       89F34320
                        *                                                        89F34330
                        * OSCILLATE INTERFACE.                                   89F34340
                        *                                                        89F34350
084A 0                  NE020 EQU     *                                          89F34360
084A 0 40CC                   BSI     NB010        OSCILLATE.                    89F34370
084B 0                  NE030 EQU     *                                          89F34380
084B 0 801E                   A       NEC02        COMPUTE RE-ENTRY ADDRESS      89F34390
084C 0 D004                   STO     NE040+1      AND PUT IN BRANCH OPERAND.    89F34400
084D 0 C780 07DC              LD   I3 NE010-BASE   GET RE-ENTRY ADDRESS AND      89F34410
084F 0 D002                   STO     NE050        STORE IN CALL.                89F34420
0850 0 4400 0000        NE040 BSI  L  *-*          BRANCH TO RE-ENTRY ADDRESS    89F34430
0852 0 0000             NE050 DC      *-*                                        89F34440
                        *                                                        89F34450
                        * PATTERN TEST COMPLETE.                                 89F34460
                        *                                                        89F34470
0853 0                  NE100 EQU     *                                          89F34480
0853 0 C0ED                   LD      NE010        GET SECOND PARAMETER AS       89F34490
0854 0 8016                   A       NEC04        RETURN ADDRESS.               89F34500
0855 0 D0EB                   STO     NE010                                      89F34510
0856 0                  NE110 EQU     *                                          89F34520
0856 0 40D4                   BSI     ND010        MOVE TO LOWEST BSM.           89F34530
0857 0 70F3                   B       NE030        BRANCH TO RE-ENTER.           89F34540
                        *                                                        89F34550
                        * OSCILLATE ONLY.                                       89F34560
                        *                                                        89F34570
0858 0 0000             NE200 DC      *-*                                        89F34580
0859 0 C0FE                   LD      NE200        MAKE IT APPEAR AS NORMAL      89F34590
085A 0 D0E6                   STO     NE010        ENTRY.                        89F34600
085B 0 70EE                   B       NE020        OSCILLATE.                    89F34610
                        *                                                        89F34620
                        * LOOP ON PATTERN TEST ENTRY.                           89F34630
                        *                                                        89F34640
085C 0 0000             NE300 DC      *-*                                        89F34650
085D 0 C0FE                   LD      NE300        MAKE IT APPEAR AS NORMAL      89F34660
085E 0 D0E2                   STO     NE010        ENTRY.                        89F34670
085F 0 70F6                   B       NE110        MOVE ANYWHERE.                89F34680
                        *                                                        89F34690
```



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                        * EXPLICIT BSM TEST ENTRY.                               89F34700
                        *                                                        89F34710
0860 0 0000             NE400 DC      *-*                                        89F34720
0861 0 C0FE                   LD      NE400        MAKE IT APPEAR AS             89F34730
0862 0 D0DE                   STO     NE010        NORMAL ENTRY.                 89F34740
0863 0 1082                   SLT     TWO          RESTORE HIGH/LOW FLAGS.       89F34750
0864 0 4804                   SKP     E            SKIP IF IN LOW HALF.          89F34760
0865 0 70E4                   B       NE020        OSCILLATE.                    89F34770
0866 0 C0DA                   LD      NE010        GET SECOND PARAMETER          89F34780
0867 0 8003                   A       NEC04        AS RETURN ADDRESS.            89F34790
0868 0 D0D8                   STO     NE010                                      89F34800
0869 0 70E0                   B       NE020        OSCILLATE.                    89F34810
                        ********************************************************** 89F34820
                        *                                                        * 89F34830
                        * CONSTANTS AND WORK AREAS                               * 89F34840
                        *                                                        * 89F34850
                        ********************************************************** 89F34860
                        *                                                        * 89F34870
086A 0 007A             NEC02 DC      AA080-AA000  ENTRY ADDRESS OF AA080.       89F34880
086B 0 0001             NEC04 DC      1            ONE, INCREMENT.               89F34890
                        *                                                        * 89F34900
                        ********************************************************** 89F34910
                        ********************************************************** 89F34920
                        *                                                        * 89F34930
                        * BIT FAILURE TALLEY SUBROUTINE                          * 89F34940
                        *                                                        * 89F34950
                        ********************************************************** 89F34960
                        *                                                        * 89F34970
                        * CALL -                                                 * 89F34980
                        *                                                        * 89F34990
                        *     BSI  L3 PQ010-BASE                                 * 89F35000
                        *                                                        * 89F35010
                        *     THE KNOWN TEST PATTERN IS AT SUC88 IN THE          * 89F35020
                        *     LINE BUFFER.  THE FAILURE PATTERN IS IN            * 89F35030
                        *     SUC90 IN THE LINE BUFFER.                          * 89F35040
                        *                                                        * 89F35050
                        *     XR1 IS SAVED AND RESTORED.                         * 89F35060
                        *                                                        * 89F35070
                        *     XR2 IS SAVED AND RESTORED.                         * 89F35080
                        *                                                        * 89F35090
                        *     XR3 IS THE PSEUDO BASE REGISTER.                   * 89F35100
                        *                                                        * 89F35110
                        *                                    3/11/69             * 89F35120
                        *                                                        * 89F35130
                        ********************************************************** 89F35140
                        *                                                        * 89F35150
086C 0 0000             PQ010 DC      *-*          ENTRY.                        89F35160
                        *                                                        89F35170
                        * DETERMINE BASE ADDRESS OF TABLE TO UPDATE.             89F35180
                        *                                                        89F35190
086D 0 0B2D                   XIO   3 AAC50-BASE   CK FOR EXTERNAL BSM.          89F35200
086E 0 1807                   SRA     SEVEN                                      89F35210
086F 0 4804                   SKP     E            SKIP IF INTERNAL.             89F35220
0870 0 7003                   B       PQ020        BRANCH IF EXTERNAL.           89F35230
0871 0 C301                   LD    3 ONE                                        89F35240
0872 0 180D                   SRA     13                                         89F35250
0873 0 7002                   B       PQ030                                      89F35260
0874 0                  PQ020 EQU     *                                          89F35270
0874 0 C3F9                   LD    3 AAC10-BASE   USE EXTERNAL BSM ID.          89F35280
0875 0 9052                   S       PQC02                                      89F35290
0876 0                  PQ030 EQU     *                                          89F35300
0876 0 A052                   M       PQC04        COMPUTE ADDRESS OF FIRST      89F35310
0877 0 18D0                   RTE     16           WORD OF STORAGE TABLE         89F35320
0878 0 8051                   A       PQC06        AND SAVE AS INDIRECT          89F35330
0879 0 8301                   A     3 ONE          ADDRESS.                      89F35340
087A 0 D050                   STO     PQC08                                      89F35350
                        *                                                        89F35360
                        * INDIRECT ADDRESS IS POINTING TO DROP BIT 0.           89F35370
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                        *                                                       89F35380
087B 0 C050                     LD      PQC10       COMPUTE ABSOLUTE ADDRESS    89F35390
087C 0 8301                     A     3 ONE         OF TEST PATTERN AND         89F35400
087D 0 D010                     STO     PQ070+1     INITIALIZE OPERAND.         89F35410
087E 0 C04E                     LD      PQC12       COMPUTE ABSOLUTE ADDRESS    89F35420
087F 0 8301                     A     3 ONE         OF FAILURE PATTERN AND      89F35430
0880 0 D008                     STO     PQ060+1     INITIALIZE OPERAND.         89F35440
0881 0 693B                     STX   1 PQ120+1     SAVE XR1.                   89F35450
0882 0 6A3C                     STX   2 PQ130+1     SAVE XR2.                   89F35460
0883 0 61F5                     LDX   1 -11         USE XR1 AS A COUNTER.       89F35470
0884 0 6288                     LDX   2 -120        XR2 POINTS TO LEFT BYTE.    89F35480
0885 0 2000                     LDS     0           SET OVERFLOW STATUS OFF.    89F35490
0886 0                  PQ050 EQU     *                                         89F35500
0886 0 C049                     LD      PQC18       INITIALIZE                  89F35510
0887 0 D047                     STO     PQC16       COUNTER.                    89F35520
0888 0 C500 0000        PQ060 LD    L1 *-*          LOAD BIT EQUIVALENT         89F35530
088A 0 1A00                     SRA   2 ZERO        OF FAILURE PATTERN.         89F35540
088B 0 E045                     AND     PQC20       MASK POSSIBLE LEFT BYTE.    89F35550
088C 0 D045                     STO     PQC22       SAVE.                       89F35560
088D 0 C500 0000        PQ070 LD    L1 *-*          LOAD BIT EQUIVALENT         89F35570
088F 0 1A00                     SRA   2 ZERO        OF TEST PATTERN.            89F35580
0890 0 E040                     AND     PQC20       MASK POSSIBLE LEFT BYTE.    89F35590
0891 0 9040                     S       PQC22       COMPARE.                    89F35600
0892 0 4818                     SKP     +-          SKIP IF PICK OR DROP.       89F35610
0893 0 7017                     B       PQ090       BRANCH NO PROBLEM.          89F35620
0894 0 4808                     SKP     +           SKIP IF PICK.               89F35630
0895 0 700E                     B       PQ080       BRANCH DROP.                89F35640
0896 0 C034                     LD      PQC08       INCREMENT INDIRECT ADDRESS  89F35650
0897 0 8030                     A       PQC02       TO PICK STORAGE.            89F35660
0898 0 D032                     STO     PQC08                                   89F35670
0899 0 C780 0866                LD    I3 PQC08-BASE  INCREMENT PICK COUNTER.    89F35680
089B 0 802C                     A       PQC02                                   89F35690
089C 0 4801                     SKP     0           SKIP NO OVERFLOW.           89F35700
089D 0 7024                     B       PQ140       BRANCH ON OVERFLOW.         89F35710
089E 0 D780 0866                STO   I3 PQC08-BASE  UPDATE COUNTER.           89F35720
08A0 0 C02A                     LD      PQC08       INCREMENT INDIRECT          89F35730
08A1 0 8026                     A       PQC02       ADDRESS TO NEXT ENTRY.      89F35740
08A2 0 D028                     STO     PQC08                                   89F35750
08A3 0 700A                     B       PQ100       BRANCH TO CONTINUE.         89F35760
08A4 0                  PQ080 EQU     *             DROP.                       89F35770
08A4 0 C780 0866                LD    I3 PQC08-BASE  INCREMENT DROP COUNTER.    89F35780
08A6 0 8021                     A       PQC02                                   89F35790
08A7 0 4801                     SKP     0           SKIP NO OVERFLOW.           89F35800
08A8 0 7019                     B       PQ140       BRANCH ON OVERFLOW.         89F35810
08A9 0 D780 0866                STO   I3 PQC08-BASE  UPDATE COUNTER.           89F35820
08AB 0                  PQ090 EQU     *                                         89F35830
08AB 0 C01F                     LD      PQC08       INCREMENT INDIRECT ADDRESS  89F35840
08AC 0 8021                     A       PQC14       BY TWO.                     89F35850
08AD 0 D01D                     STO     PQC08                                   89F35860
                        *                                                       89F35870
                        * DONE UPDATING AN ENTRY.                               89F35880
                        *                                                       89F35890
08AE 0                  PQ100 EQU     *                                         89F35900
08AE 0 C020                     LD      PQC16       DECREMENT LOOP COUNTER.     89F35910
08AF 0 9018                     S       PQC02                                   89F35920
08B0 0 4808                     SKP     +           SKIP NOT ZERO TO CONTINUE.  89F35930
08B1 0 7008                     B       PQ110       BRANCH IF ZERO.             89F35940
08B2 0 D01C                     STO     PQC16       UPDATE COUNTER.             89F35950
08B3 0 7200                     MDX   2 ZERO        IF RIGHT BYTE SKIP.         89F35960
08B4 0 7278                     MDX   2 120         MAKE RIGHT BYTE AND SKIP.   89F35970
08B5 0 7288                     MDX   2 -120        MAKE LEFT BYTE AND SKIP.    89F35980
08B6 0 7001                     MDX     *+1         SKIP.                       89F35990
08B7 0 7101                     MDX   1 ONE         UPDATE WORD POINTER.        89F36000
08B8 0 70CF                     B       PQ060       LOOP.                       89F36010
08B9 0 7002                     B       PQ120       BRANCH OUT WHEN DONE.       89F36020
                        *                                                       89F36030
                        * LOOP COUNTER ZERO.                                    89F36040
                        *                                                       89F36050
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08BA 0                  PQ110 EQU     *                                         89F36060
08BA 0 7101                     MDX   1 ONE         DECREMENT WORD POINTER.     89F36070
08BB 0 70CA                     B       PQ050       BRANCH NOT DONE.            89F36080
                        *                                                       89F36090
                        * SUBROUTINE DONE.                                      89F36100
                        *                                                       89F36110
08BC 0 6500 0000        PQ120 LDX   L1 *-*          RESTORE XR1.                89F36120
08BE 0 6600 0000        PQ130 LDX   L2 *-*          RESTORE XR2.                89F36130
08C0 0 4F80 0807                B     I3 PQ010-BASE  RETURN.                    89F36140
08C2 0                  PQ140 EQU     *                                         89F36150
08C2 0 C0FC                     LD      PQ130+1     RESTORE XR2.                89F36160
08C3 0 D001                     STO     PQ150+1                                 89F36170
08C4 0 6600 0000        PQ150 LDX   L2 *-*                                      89F36180
08C6 0 4F00 0426                B     L3 HZ500-BASE  OVERFLOW EXIT.             89F36190
                        ********************************************************* 89F36200
                        *                                                       * 89F36210
                        * CONSTANTS AND WORK AREAS                              * 89F36220
                        *                                                       * 89F36230
                        ********************************************************* 89F36240
                        *                                                       * 89F36250
08C8 0 0001             PQC02 DC      1             ONE.                        89F36260
08C9 0 0024             PQC04 DC      36            NO. WORDS IN EACH TABLE.    89F36270
                        *                           RELATIVE BASE ADDRESS OF    89F36280
08CA 0 0CED             PQC06 DC      PXK20-BASE    BIT FAIL. STORAGE TABLE.    89F36290
08CB    0001            PQC08 BSS     1             INDIRECT ADDRESS.           89F36300
                        *                           RELATIVE BASE ADDRESS OF    89F36310
08CC 0 0BDA             PQC10 DC      SUC88+11-BASE TEST PATTERN.               89F36320
                        *                           RELATIVE BASE ADDRESS OF    89F36330
08CD 0 0BE6             PQC12 DC      SUC90+11-BASE FAILURE PATTERN.            89F36340
08CE 0 0002             PQC14 DC      2             TWO.                        89F36350
08CF    0001            PQC16 BSS     1             COUNTER.                    89F36360
08D0 0 0004             PQC18 DC      4             FOUR.                       89F36370
08D1 0 00FF             PQC20 DC      /00FF         MASK TO LEAVE RIGHT BYTE.   89F36380
08D2    0001            PQC22 BSS     1             STORAGE AREA.               89F36390
                        *                                                       * 89F36400
                        ********************************************************* 89F36410
                        ********************************************************* 89F36420
                        *                                                       * 89F36430
                        * FAILURES BY ADDRESS LINE TALLEY SUBROUTINE            * 89F36440
                        *                                                       * 89F36450
                        ********************************************************* 89F36460
                        *                                                       * 89F36470
                        * THIS SUBROUTINE TALLEYS THE FAILURES BY ADDRESS       * 89F36480
                        * LINE.  TOTALS ARE KEPT IN MATRIX PXK30.  IT ALSO      * 89F36490
                        * TALLEYS FAILURES BY SENSE/INHIBIT BLOCK IN            * 89F36500
                        * MATRIX PXK40.                                         * 89F36510
                        *                                                       * 89F36520
                        * CALL -                                                * 89F36530
                        *     BSI  L3 PR010-BASE                                * 89F36540
                        *                                                       * 89F36550
                        *     XR1 CONTAINS THE FAILURE ADDRESS.                 * 89F36560
                        *                                                       * 89F36570
                        *     XR2 IS NOT USED.                                  * 89F36580
                        *                                                       * 89F36590
                        *     XR3 IS THE PSEUDO BASE REGISTER.                  * 89F36600
                        *                                                       * 89F36610
                        ********************************************************* 89F36620
                        *                                                       * 89F36630
08D3 0 0000             PR010 DC      *-*           ENTRY.                      89F36640
08D4 0 693F                     STX   1 PR040+1     SAVE XR1 AND ADDRESS.       89F36650
08D5 0 0B2D                     XIO   3 AAC50-BASE  CK FOR EXTERNAL BSM.        89F36660
08D6 0 1807                     SRA     SEVEN                                   89F36670
08D7 0 4804                     SKP     E           SKIP IF INTERNAL TEST.      89F36680
08D8 0 7003                     B       PR014       BRANCH EXTERNAL.            89F36690
08D9 0 C301                     LD    3 ONE         LOAD INTERNAL ID.           89F36700
08DA 0 180D                     SRA     13                                      89F36710
08DB 0 7002                     B       PR016                                   89F36720
08DC 0                  PR014 EQU     *                                         89F36730
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08DC 0 C3F9                LD    3 AAC10-BASE  USE EXTERNAL BSM ID.          89F36740
08DD 0 9040                S       PRC06                                     89F36750
08DE 0                   PR016 EQU   *                                       89F36760
08DE 0 D045                STO     PRC18       SAVE FOR S/I UPDATE.          89F36770
08DF 0 A03F                M       PRC08       LINE FAILURE STORAGE          89F36780
08E0 0 18D0                RTE     16          TABLE AND SAVE AS             89F36790
08E1 0 803E                A       PRC10       BASIC INDIRECT ADDRESS.       89F36800
08E2 0 8301                A     3 ONE                                       89F36810
08E3 0 D039                STO     PRC04                                     89F36820
08E4 0 2000                LDS     0           RESET OVERFLOW STATUS.        89F36830
08E5 0 6103                LDX   1 THREE       USE XR1 AS A COUNTER.         89F36840
08E6 0 C02D                LD      PR040+1     LOAD ADDRESS PATTERN AND      89F36850
08E7 0 188D                SRT     13          PUT BITS 3-15 IN Q.           89F36860
08E8 0                   PR020 EQU   *                                       89F36870
08E8 0 1810                SRA     16          CLEAR ACC. FOR ADDR. GEN.     89F36880
08E9 0 1083                SLT     THREE       COMPUTE ADDRESS AND           89F36890
08EA 0 8032                A       PRC04       STORE IN INDIRECT             89F36900
08EB 0 D035                STO     PRC12       ADDRESS PRC12.                89F36910
08EC 0 C780 08BC           LD    I3 PRC12-BASE  INCREMENT HI X, LO X AND     89F36920
08EE 0 802F                A       PRC06       HI Y STORAGE.                 89F36930
08EF 0 4801                SKP     0           SKIP NO OVERFLOW.             89F36940
08F0 0 702A                B       PR060       BRANCH IF COUNTER FULL.       89F36950
08F1 0 D780 08BC           STO   I3 PRC12-BASE                               89F36960
08F3 0 C029                LD      PRC04       UPDATE BASE                   89F36970
08F4 0 802D                A       PRC14       INDIRECT                      89F36980
08F5 0 D027                STO     PRC04       ADDRESS.                      89F36990
08F6 0 71FF                MDX   1 -1          DECREMENT COUNTER.            89F37000
08F7 0 70F0                B       PR020       LOOP.                         89F37010
08F8 0 1810                SRA     16                                        89F37020
08F9 0 1084                SLT     FOUR                                      89F37030
08FA 0 8022                A       PRC04                                     89F37040
08FB 0 D025                STO     PRC12                                     89F37050
08FC 0 C780 08BC           LD    I3 PRC12-BASE                               89F37060
08FE 0 801F                A       PRC06                                     89F37070
08FF 0 4801                SKP     0           SKIP NO OVERFLOW.             89F37080
0900 0 701A                B       PR060       BRANCH IF COUNTER FULL.       89F37090
0901 0 D780 08BC           STO   I3 PRC12-BASE                               89F37100
                         *                                                   89F37110
                         * UPDATE SENSE/INHIBIT FAILURE STORAGE.             89F37120
                         *                                                   89F37130
0903 0 C020                LD      PRC18       LOAD STORAGE AREA ID.         89F37140
0904 0 1001                SLA     ONE         FAILURE STORAGE FOR THIS      89F37150
0905 0 801D                A       PRC16       PATTERN TEST.                 89F37160
0906 0 8301                A     3 ONE                                       89F37170
0907 0 D015                STO     PRC04                                     89F37180
0908 0 C00B                LD      PR040+1     TEST FAILURE ADDRESS FOR      89F37190
0909 0 180C                SRA     12          HI OR LO 4K.                  89F37200
090A 0 4804                SKP     E           SKIP IF LOW 4K.               89F37210
090B 0 700B                B       PR050       BRANCH IF HIGH 4K.            89F37220
090C 0                   PR030 EQU   *                                       89F37230
090C 0 C780 08B8           LD    I3 PRC04-BASE  INCREMENT ENTRY              89F37240
090E 0 800F                A       PRC06       IN TABLE.                     89F37250
090F 0 4801                SKP     0           SKIP NO OVERFLOW.             89F37260
0910 0 700A                B       PR060       BRANCH IF COUNTER FULL.       89F37270
0911 0 D780 08B8           STO   I3 PRC04-BASE                               89F37280
0913 0 6500 0000         PR040 LDX   L1 *-*      RESTORE XR1                 89F37290
0915 0 4F80 086E           B     I3 PR010-BASE  AND RETURN.                  89F37300
0917 0                   PR050 EQU   *                                       89F37310
0917 0 C005                LD      PRC04       INCREMENT INDIRECT            89F37320
0918 0 8005                A       PRC06       ADDRESS.                      89F37330
0919 0 D003                STO     PRC04                                     89F37340
091A 0 70F1                B       PR030       BRANCH TO CONTINUE UPDATE.    89F37350
091B 0                   PR060 EQU   *                                       89F37360
091B 0 4F00 0426           B     L3 HZ500-BASE  BRANCH TO OVERFLOW SUBR.     89F37370
                         ************************************************* 89F37380
                         *                                                 * 89F37390
                         * CONSTANTS AND WORK AREAS                        * 89F37400
                         *                                                 * 89F37410
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                         ************************************************* 89F37420
                         *                                               * 89F37430
091D   0001              PRC04 BSS     1           WORK AREA.                89F37440
091E 0 0001              PRC06 DC      1           ONE.                      89F37450
091F 0 0028              PRC08 DC      40          FORTY.                    89F37460
                         *                       RELATIVE ADDRESS OF       89F37470
0920 0 0E0D              PRC10 DC      PXK30-BASE  STORAGE TABLE.            89F37480
0921   0001              PRC12 BSS     1           INDIRECT ADDRESS.         89F37490
0922 0 0008              PRC14 DC      8           EIGHT                     89F37500
                         *                       RELATIVE ADDRESS OF       89F37510
0923 0 0F4D              PRC16 DC      PXK40-BASE  STORAGE TABLE PXK40.      89F37520
0924   0001              PRC18 BSS     1           TEMPORARY STORAGE.        89F37530
                         *                                               * 89F37540
                         ************************************************* 89F37550
                         ************************************************* 89F37560
                         *                                               * 89F37570
                         * LOOP AND TEST FAILURE COUNTER UPDATE SUBROUTINE * 89F37580
                         *                                               * 89F37590
                         ************************************************* 89F37600
                         *                                               * 89F37610
                         * THIS SUBROUTINE TALLEYS LOOPS OF A ROUTINE OR   * 89F37620
                         * FAILURES BY ROUTINE.                            * 89F37630
                         *                                               * 89F37640
                         * CALL -                                        * 89F37650
                         *                                               * 89F37660
                         *     BSI  L3 PS010-BASE                        * 89F37670
                         *                                               * 89F37680
                         *     THE ACCUMULATOR CONTAINS THE RELATIVE BASE * 89F37690
                         * ADDRESS OF THE AREA TO UPDATE.                  * 89F37700
                         *                                               * 89F37710
                         *     XR1 IS NOT USED.                          * 89F37720
                         *                                               * 89F37730
                         *     XR2 CONTAINS THE TEST PATTERN NUMBER.     * 89F37740
                         *                                               * 89F37750
                         *     XR3 IS THE PSEUDO BASE REGISTER.          * 89F37760
                         *                                               * 89F37770
                         ************************************************* 89F37780
                         *                                               * 89F37790
0925 0 0000              PS010 DC      *-*         ENTRY.                    89F37800
0926 0 D0FD                STO     PRC18       SAVE TABLE BASE ADDRESS.      89F37810
0927 0 2000                LDS     0           RESET OVERFLOW STATUS.        89F37820
0928 0 0B2D                XIO   3 AAC50-BASE  CK FOR EXTERNAL TEST          89F37830
0929 0 1807                SRA     SEVEN                                     89F37840
092A 0 4804                SKP     E           SKIP IF OFF.                  89F37850
092B 0 7003                B       PS014       BRANCH IF ON.                 89F37860
092C 0 C301                LD    3 ONE         TALLEY FOR THIS BSM.          89F37870
092D 0 180D                SRA     13                                        89F37880
092E 0 7002                B       PS016       BRANCH TO CONTINUE.           89F37890
092F 0                   PS014 EQU   *                                       89F37900
092F 0 C3F9                LD    3 AAC10-BASE  TALLEY FOR EXTERNAL           89F37910
0930 0 90ED                S       PRC06       BSM.                          89F37920
0931 0                   PS016 EQU   *                                       89F37930
0931 0 A020                M       PSC06       COMPUTE ABSOLUTE BASE         89F37940
0932 0 18D0                RTE     16          ADDRESS OF TABLE TO           89F37950
0933 0 80F0                A       PRC18       UPDATE.                       89F37960
0934 0 8301                A     3 ONE                                       89F37970
0935 0 D002                STO     PS020+1     STORE IN INSTRUCTION          89F37980
0936 0 D006                STO     PS030+1     OPERANDS.                     89F37990
0937 0 C600 0000         PS020 LD    L2 *-*      INCREMENT TABLE             89F38000
0939 0 80E4                A       PRC06       ENTRY.                        89F38010
093A 0 4801                SKP     0           SKIP NO OVERFLOW.             89F38020
093B 0 700C                B       PS050       BRANCH IF COUNTER FULL.       89F38030
093C 0 D600 0000         PS030 STO   L2 *-*                                  89F38040
093E 0 C0E5                LD      PRC18       IF THIS IS A LOOP             89F38050
093F 0 F01F                EOR     PSC14       COUNTER UPDATE, CHECK         89F38060
0940 0 4820                SKP     Z           FOR PASS COMPLETE             89F38070
0941 0 7004                B       PS040       MESSAGE.                      89F38080
0942 0 0B2D                XIO   3 AAC50-BASE  SEND PASS COMPLETE            89F38090
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0943 0 1805                SRA     FIVE        MESSAGE IF LOOP ON          89F38100
0944 0 4804                SKP     E           ROUTINE SWITCH IS           89F38110
0945 0 7004                B       PS060       ON.                         89F38120
0946 0                PS040 EQU    *                                       89F38130
0946 0 4F80 08C0           B    I3 PS010-BASE  RETURN.                     89F38140
0948 0                PS050 EQU    *                                       89F38150
0948 0 4F00 0426           B    L3 HZ500-BASE  BRANCH TO OVERFLOW SUBR.    89F38160
094A 0                PS060 EQU    *                                       89F38170
094A 0 6A0A                STX   2 PSC12       PUT ROUTINE ID. IN          89F38180
094B 0 C009                LD      PSC12       PASS COMPLETE               89F38190
094C 0 E806                OR      PSC08       MESSAGE.                    89F38200
094D 0 D007                STO     PSC12                                   89F38210
094E 0 4700 06DA           BSI  L3 MA010-BASE  WRITE PASS COMPLETE         89F38220
0950 0 08EF                DC      PSC10-BASE  MESSAGE.                    89F38230
0951 0 70F4                B       PS040       EXIT.                       89F38240
                      *                                                   * 89F38250
                      ***************************************************** 89F38260
                      *                                                   * 89F38270
                      * CONSTANTS AND WORK AREAS                          * 89F38280
                      *                                                   * 89F38290
                      ***************************************************** 89F38300
                      *                                                   * 89F38310
                      *                                                     89F38320
                      * THE FOLLOWING CONSTANT REFLECTS THE NUMBER OF       89F38330
                      * WORDS IN EACH TABLE OF PXK50 AND PXK60 AND WILL     89F38340
                      * HAVE TO BE CHANGED IF THE SIZE OF THE TABLES ARE    89F38350
                      * CHANGED.                                           89F38360
                      *                                                     89F38370
0952 0 0003           PSC06 DC      3           NO. WORDS IN EACH TABLE.    89F38380
0953 0 0A00           PSC08 DC      /0A00       MASK FOR ERROR MESSAGE.     89F38390
0954 0 000A           PSC10 DC      10          WORD COUNT.                 89F38400
0955 0 0000           PSC12 DC      /0000       0X                          89F38410
0956 0 0A08                 DC      /0A08       08                          89F38420
0957 0 0000                 DC      /0000                                   89F38430
0958 0 2731                 DC      /2731       PA                          89F38440
0959 0 1212                 DC      /1212       SS                          89F38450
095A 0 0033                 DC      /0033        C                          89F38460
095B 0 2624                 DC      /2624       OM                          89F38470
095C 0 2723                 DC      /2723       PL                          89F38480
095D 0 3513                 DC      /3513       ET                          89F38490
095E 0 3500                 DC      /3500       E                           89F38500
095F 0 0F75           PSC14 DC      PXK60-BASE  LOOP COUNTER.               89F38510
                      *                                                   * 89F38520
                      ***************************************************** 89F38530
                      ***************************************************** 89F38540
                      *                                                   * 89F38550
                      * CLEAR SUMMARY STORAGE                             * 89F38560
                      *                                                   * 89F38570
                      ***************************************************** 89F38580
                      *                                                   * 89F38590
                      * THIS SUBROUTINE CLEARS THE SUMMARY STORAGE AREA   * 89F38600
                      * AT THE END OF THE PROGRAM.                        * 89F38610
                      *                                                   * 89F38620
                      * CALL -                                            * 89F38630
                      *                                                   * 89F38640
                      *     BSI  L3 PT010-BASE                            * 89F38650
                      *                                                   * 89F38660
                      *     XR1 IS NOT USED.                              * 89F38670
                      *                                                   * 89F38680
                      *     XR2 SHOULD BE UNSPECIFIED.                    * 89F38690
                      *                                                   * 89F38700
                      *     XR3 IS THE PSEUDO BASE REGISTER.              * 89F38710
                      *                                                   * 89F38720
                      ***************************************************** 89F38730
                      *                                                   * 89F38740
0960 0 0000           PT010 DC      *-*         ENTRY.                      89F38750
0961 0 C700 0CEA            LD   L3 PXK04-BASE COMPUTE NUMBER OF            89F38760
0963 0 1003                 SLA     THREE       WORDS TO ZERO AND           89F38770
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0964 0 0001                STO     PT020+1     REGISTER TWO.               89F38780
0965 0 6600 0000      PT020 LDX   L2 *-*                                    89F38790
0967 0 C700 0CEB            LD      L3 PXK06-BASE  COMPUTE ABSOLUTE BASE    89F38800
0969 0 8301                 A     3 ONE         ADDRESS AND STORE IN        89F38810
096A 0 D002                 STO     PT030+1     INSTRUCTION OPERAND.        89F38820
096B 0 10A2                 SLT     34          ZERO ACCUMULATOR AND Q.     89F38830
096C 0 DE00 0000      PT030 STD   L2 *-*         ZERO EACH WORD.             89F38840
096E 0 72FE                 MDX     2 -2        DECREMENT COUNTER.          89F38850
096F 0 70FC                 B       PT030       LOOP.                       89F38860
0970 0 D700 0BFC            STO   L3 SVC02-BASE  RESET HEADING SWITCH.      89F38870
0972 0 4F80 08FB            B     I3 PT010-BASE  RETURN.                    89F38880
                      ***************************************************** 89F38890
                      *                                                   * 89F38900
                      * COMMON SUBROUTINES FOR SAXXX ROUTINES             * 89F38910
                      *                                                   * 89F38920
                      ***************************************************** 89F38930
                      *                                                   * 89F38940
0974 0 0000           SA010 DC      *-*         ENTRY.                      89F38950
0975 0 0B2D                 XIO   3 AAC50-BASE  SENSE DATA ENTRY SWS        89F38960
0976 0 1008                 SLA     EIGHT       TEST SWITCH 8, EXTERNAL.    89F38970
0977 0 4828                 SKP     +Z          SKIP NOT ON.                89F38980
0978 0 700B                 B       SA040       BRANCH IF EXTERNAL TEST.    89F38990
0979 0 C301                 LD    3 ONE         GET BASE ADDRESS.           89F39000
097A 0 E00F                 AND     SAC02       MASK OFF BITS 4-15.         89F39010
097B 0 F00F                 EOR     SAC04       CHANGE BIT 3.               89F39020
097C 0 D00F                 STO     SAC06       SAVE.                       89F39030
097D 0 8010                 A       SAC10       COMPUTE HIGHEST ADDRESS.    89F39040
097E 0                SA020 EQU    *                                       89F39050
097E 0 1890                 SRT     EXCHA       SAVE IN Q.                  89F39060
097F 0 C00C                 LD      SAC06       TEST LOWEST ADDRESS FOR 0.  89F39070
0980 0 4818                 SKP     +-          SKIP NOT 0.                 89F39080
                      *                                                     89F39090
                      * IF THE LOWEST ADDRESS IS ZERO, IT MUST BE MADE     89F39100
                      * 10, TO PROTECT INTERRUPT CELLS AND THE RESTART     89F39110
                      * BRANCHES.                                          89F39120
                      *                                                     89F39130
0981 0 800E                 A       SAC16       START TEST AT 10.           89F39140
0982 0 4F80 090F            B     I3 SA010-BASE  RETURN.                    89F39150
0984 0                SA040 EQU    *                                       89F39160
                      *                                                     89F39170
                      * EXTERNAL BSM TO TEST.                              89F39180
                      *                                                     89F39190
0984 0 C3F9                 LD    3 AAC10-BASE  CALCULATE STARTING          89F39200
0985 0 9007                 S       SAC08       ADDRESS FROM EXPLICIT BSM   89F39210
0986 0 100D                 SLA     13          SETTING.                    89F39220
0987 0 D004                 STO     SAC06       SAVE.                       89F39230
0988 0 8006                 A       SAC14       COMPUTE HIGHEST ADDRESS.    89F39240
0989 0 70F4                 B       SA020       BRANCH TO CONTINUE.         89F39250
                      ***************************************************** 89F39260
                      *                                                   * 89F39270
                      * CONSTANTS AND WORK AREAS                          * 89F39280
                      *                                                   * 89F39290
                      ***************************************************** 89F39300
                      *                                                   * 89F39310
098A 0 F000           SAC02 DC      /F000       MASK BITS 4-15.             89F39320
098B 0 1000           SAC04 DC      /1000       BIT 3.                      89F39330
098C   0001           SAC06 BSS     1           TEMPORARY STORAGE.          89F39340
098D 0 0001           SAC08 DC      1           ONE.                        89F39350
098E 0 0FFF           SAC10 DC      /0FFF       4K.                         89F39360
098F 0 1FFF           SAC14 DC      /1FFF       8K                          89F39370
0990 0 000A           SAC16 DC      10          TEN.                        89F39380
                      *                                                   * 89F39390
                      ***************************************************** 89F39400
                      ***************************************************** 89F39410
                      *                                                   * 89F39420
                      * SET ADDRESS TEST LIMITS, RIPPLE UP CORE           * 89F39430
                      *                                                   * 89F39440
                      ***************************************************** 89F39450
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                                                                      * 89F39460
                        * THIS SUBROUTINE SETS THE STARTING ADDRESS FOR   * 89F39470
                        * A PATTERN TEST IN XR1.  THE OTHER ADDRESS LIMIT * 89F39480
                        * IS IN THE ACCUMULATOR AT EXIT.                  * 89F39490
                        *                                                 * 89F39500
                        * CALL -                                          * 89F39510
                        *     BSI  L3 SA100-BASE                          * 89F39520
                        *                                                 * 89F39530
                        *     XR1 HAS THE STARTING ADDRESS UPON EXIT.     * 89F39540
                        *                                                 * 89F39550
                        *     XR2 IS NOT USED.                            * 89F39560
                        *                                                 * 89F39570
                        *     XR3 IS THE PSEUDO BASE REGISTER.            * 89F39580
                        *                                                 * 89F39590
                        *     THE ACCUMULATOR CONTAINS THE LAST ADDRESS TO* 89F39600
                        *     TEST UPON EXIT.                             * 89F39610
                        *                                                 * 89F39620
                        ************************************************* 89F39630
                        *                                                 * 89F39640
0991 0 0000             SA100 DC      *-*         ENTRY.                    89F39650
0992 0 40E1                   BSI     SA010       DETERMINE LIMITS.         89F39660
0993 0 0001                   STO     SA110+1     INITIALIZE XR2 WITH       89F39670
0994 0 6500 0000        SA110 LDX  L1 *-*         STARTING ADDRESS.         89F39680
0996 0 1090                   SLT     EXCHA       END ADDRESS IN ACCUMULATOR 89F39690
0997 0 4F80 092C              B    I3 SA100-BASE  RETURN.                   89F39700
                        ************************************************* 89F39710
                        *                                                 * 89F39720
                        * SET ADDRESS LIMITS, RIPPLE DOWN CORE            * 89F39730
                        *                                                 * 89F39740
                        ************************************************* 89F39750
                        *                                                 * 89F39760
                        * THIS SUBROUTINE SETS THE STARTING ADDRESS FOR   * 89F39770
                        * A PATTERN TEST IN XR1.  THE OTHER ADDRESS LIMIT * 89F39780
                        * IS IN THE ACCUMULATOR AT EXIT.                  * 89F39790
                        *                                                 * 89F39800
                        * CALL -                                          * 89F39810
                        *                                                 * 89F39820
                        *     BSI  L3 SA200-BASE                          * 89F39830
                        *                                                 * 89F39840
                        *     XR1 HAS THE STARTING ADDRESS UPON EXIT.     * 89F39850
                        *                                                 * 89F39860
                        *     XR2 IS NOT USED.                            * 89F39870
                        *                                                 * 89F39880
                        *     XR3 IS THE PSEUDO BASE REGISTER.            * 89F39890
                        *                                                 * 89F39900
                        *     THE ACCUMULATOR CONTAINS THE LAST ADDRESS   * 89F39910
                        *     TO TEST UPON EXIT.                          * 89F39920
                        *                                                 * 89F39930
                        ************************************************* 89F39940
                        *                                                 * 89F39950
0999 0 0000             SA200 DC      *-*         ENTRY.                    89F39960
099A 0 40D9                   BSI     SA010       DETERMINE LIMITS.         89F39970
099B 0 18D0                   RTE     EXCHA       INITIALIZE XR2            89F39980
099C 0 D001                   STO     SA210+1     WITH STARTING             89F39990
099D 0 6500 0000        SA210 LDX  L1 *-*         ADDRESS.                  89F40000
099F 0 1090                   SLT     EXCHA       END ADDRESS IN ACCUMULATOR 89F40010
09A0 0 4F80 0934              B    I3 SA200-BASE  RETURN.                   89F40020
                        ************************************************* 89F40030
                        *                                                 * 89F40040
                        * BIT FAILURE SUMMARY PRINT SUBROUTINE            * 89F40050
                        *                                                 * 89F40060
                        ************************************************* 89F40070
                        *                                                 * 89F40080
                        * THIS ROUTINE PRINTS THE BIT FAILURE SUMMARY FOR * 89F40090
                        * THE STORAGE MODULE INDICATED IN HZK01.           * 89F40100
                        *                                                 * 89F40110
                        * CALL -                                          * 89F40120
                        *                                                 * 89F40130
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                        *     BSI  L3 SB010-BASE                          * 89F40140
                        *                                                 * 89F40150
                        *     XR1 IS SAVED AND RESTORED                   * 89F40160
                        *                                                 * 89F40170
                        *     XR2 INDICATES THE SUMMARY ROUTINE.          * 89F40180
                        *                                                 * 89F40190
                        *     XR3 IS THE PSEUDO BASE REGISTER.            * 89F40200
                        *                                                 * 89F40210
                        *     THE BSM ID. IS IN HZK01.                    * 89F40220
                        *                                                 * 89F40230
                        ************************************************* 89F40240
                        *                                                 * 89F40250
09A2 0 0000             SB010 DC      *-*         ENTRY.                    89F40260
09A3 0 4700 06DA              BSI  L3 MA010-BASE  WRITE A SPACE.            89F40270
09A5 0 F000                   DC      /F000       SPACE FUNCTION.           89F40280
09A6 0 4700 06DA              BSI  L3 MA010-BASE  WRITE HEADING.            89F40290
09A8 0 0986                   DC      SBC70-BASE  MESSAGE HEADING.          89F40300
09A9 0 4700 06DA              BSI  L3 MA010-BASE  WRITE A SPACE.            89F40310
09AB 0 F000                   DC      /F000       SPACE FUNCTION.           89F40320
09AC 0 4700 06DA              BSI  L3 MA010-BASE  WRITE HEADING.            89F40330
09AE 0 098D                   DC      SBC80-BASE  MESSAGE HEADING.          89F40340
09AF 0 4700 06DA              BSI  L3 MA010-BASE  WRITE A SPACE.            89F40350
09B1 0 F000                   DC      /F000       SPACE FUNCTION.           89F40360
09B2 0 4700 0BAF              BSI  L3 SU010-BASE  ZERO LINE BUFFER.          89F40370
09B4 0 6929                   STX     1 SB050+1   SAVE XR1.                 89F40380
09B5 0 6A2A                   STX     2 SB060+1   SAVE XR2.                 89F40390
09B6 0 61EE                   LDX     1 -18       XR1 IS A POINTER, COUNTER. 89F40400
09B7 0 C02B                   LD      SBC02       USE XR2 AS A POINTER      89F40410
09B8 0 8301                   A       3 ONE       TO BUFFER AREA.           89F40420
09B9 0 D001                   STO     SB020+1                               89F40430
09BA 0 6600 0000        SB020 LDX  L2 *-*         LOAD POINTER INTO XR2.    89F40440
09BC 0 C027                   LD      SBC04       BUILD OPERAND FOR         89F40450
09BD 0 8301                   A       3 ONE       BIT STRING.               89F40460
09BE 0 D009                   STO     SB030+1                               89F40470
09BF 0 C700 03F5              LD   L3 HZK01-BASE  COMPUTE ABSOLUTE ADDRESS  89F40480
09C1 0 9023                   S       SBC06       OF BASE OF BIT FAILURE    89F40490
09C2 0 A023                   M       SBC08       STORAGE TABLE ENTRY TO    89F40500
09C3 0 18D0                   RTE     16          CONVERT.                  89F40510
09C4 0 8022                   A       SBC10                                 89F40520
09C5 0 8301                   A       3 ONE                                 89F40530
09C6 0 D021                   STO     SBC12       SAVE AS INDIRECT ADDRESS. 89F40540
09C7 0 C500 0000        SB030 LD   L1 *-*         GET BIT ID.               89F40550
09C9 0 D200                   STO     2 ZERO      PUT IN BUFFER AND         89F40560
09CA 0 7202                   MDX     2 TWO       INCREMENT POINTER         89F40570
09CB 0 CF80 0983              LDD  I3 SBC12-BASE  LOAD DROP AND PICK        89F40580
09CD 0 4041                   BSI     SC010       COUNTERS AND CONVERT      89F40590
09CE 0 C01B                   LD      SBC16       PUT CONVERTED CHARACTERS  89F40600
09CF 0 4700 0A07              BSI  L3 SD010-BASE  IN BUFFER LINE.           89F40610
09D1 0 4700 06DA              BSI  L3 MA010-BASE  WRITE LINE.               89F40620
09D3 0 0BC0                   DC      SUC80-BASE  MESSAGE.                  89F40630
09D4 0 72FA                   MDX     2 -6        RESTORE XR2               89F40640
09D5 0 C012                   LD      SBC12       UPDATE INDIRECT           89F40650
09D6 0 8012                   A       SBC14       ADDRESS TO BIT            89F40660
09D7 0 D010                   STO     SBC12       FAILURE STORAGE.          89F40670
09D8 0 7101                   MDX     1 ONE       INCREMENT COUNTER.        89F40680
09D9 0 70ED                   B       SB030       LOOP.                     89F40690
                        *                                                   89F40700
                        * SUMMARY COMPLETE.                                 89F40710
                        *                                                   89F40720
09DA 0 4700 06DA              BSI  L3 MA010-BASE  WRITE A SPACE.            89F40730
09DC 0 F000                   DC      /F000       SPACE FUNCTION            89F40740
09DD 0 6500 0000        SB050 LDX  L1 *-*         RESTORE XR1.              89F40750
09DF 0 6600 0000        SB060 LDX  L2 *-*         RESTORE XR2.              89F40760
09E1 0 4F80 093D              B    I3 SB010-BASE  RETURN.                   89F40770
                        ************************************************* 89F40780
                        *                                                 * 89F40790
                        * CONSTANTS AND WORK AREAS                        * 89F40800
                        *                                                 * 89F40810
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                        ************************************************** 89F40820
                        *                                              * 89F40830
                        *                                              * 89F40840
09E3 0 0BC2             SBC02 DC      SUC84-BASE  RELATIVE ADDRESS OF LINE   89F40850
                        *                         BUFFER.                  89F40860
09E4 0 09AA             SBC04 DC      SBC92-BASE  RELATIVE ADDRESS OF BASE   89F40870
09E5 0 0001             SBC06 DC      1           OF BIT STORAGE IDNTS.      89F40880
09E6 0 0024             SBC08 DC      36          ONE.                       89F40890
                        *                         THIRTY SIX.              89F40900
09E7 0 0CED             SBC10 DC      PXK20-BASE  RELATIVE ADDRESS OF BASE   89F40910
09E8    0001            SBC12 BSS     1           OF STORAGE TABLE.          89F40920
09E9 0 0002             SBC14 DC      2           INDIRECT ADDRESS.          89F40930
09EA 0 7204             SBC16 MDX   2 FOUR       TWO.                       89F40940
09EB 0 0006             SBC70 DC      6           INSTRUCTION FOR FILL RTN.  89F40950
09EC 0 3239                   DC      /3239       SUMMARY HEADING.           89F40960
09ED 0 1300                   DC      /1300       BI                         89F40970
09EE 0 3631                   DC      /3631       T                          89F40980
09EF 0 3923                   DC      /3923       FA                         89F40990
09F0 0 1429                   DC      /1429       IL                         89F41000
09F1 0 3512                   DC      /3512       UR                         89F41010
09F2 0 000A             SBC80 DC      10          ES                         89F41020
09F3 0 0000                   DC      /0000       HEADING.                   89F41030
09F4 0 3239                   DC      /3239       BI                         89F41040
09F5 0 1300                   DC      /1300       T                          89F41050
09F6 0 0000                   DC      /0000                                  89F41060
09F7 0 3429                   DC      /3429       DR                         89F41070
09F8 0 2627                   DC      /2627       OP                         89F41080
09F9 0 0000                   DC      /0000                                  89F41090
09FA 0 0000                   DC      /0000                                  89F41100
09FB 0 2739                   DC      /2739       PI                         89F41110
09FC 0 3322                   DC      /3322       CK                         89F41120
                        *                                                    89F41130
09FD 0 000A                   DC      /000A       0                          89F41140
09FE 0 0001                   DC      /0001       1                          89F41150
09FF 0 0002                   DC      /0002       2                          89F41160
0A00 0 0003                   DC      /0003       3                          89F41170
0A01 0 0004                   DC      /0004       4                          89F41180
0A02 0 0005                   DC      /0005       5                          89F41190
0A03 0 0006                   DC      /0006       6                          89F41200
0A04 0 0007                   DC      /0007       7                          89F41210
0A05 0 0008                   DC      /0008       8                          89F41220
0A06 0 0009                   DC      /0009       9                          89F41230
0A07 0 010A                   DC      /010A       10                         89F41240
0A08 0 0101                   DC      /0101       11                         89F41250
0A09 0 0102                   DC      /0102       12                         89F41260
0A0A 0 0103                   DC      /0103       13                         89F41270
0A0B 0 0104                   DC      /0104       14                         89F41280
0A0C 0 0105                   DC      /0105       15                         89F41290
0A0D 0 0012                   DC      /0012       S                          89F41300
0A0E 0 0027                   DC      /0027       P                          89F41310
0A0F 0                  SBC92 EQU     *           BITS.                      89F41320
                        *                                              * 89F41330
                        ************************************************** 89F41340
                        ************************************************** 89F41350
                        *                                              * 89F41360
                        * BINARY TO 1443 DECIMAL CODE CONVERSION       * 89F41370
                        *                                              * 89F41380
                        ************************************************** 89F41390
                        *                                              * 89F41400
                        * THIS SUBROUTINE CONVERTS A ONE WORD BINARY    * 89F41410
                        * INTEGER TO FIVE 1443 PRINTER CHARACTERS IN    * 89F41420
                        * THREE WORDS.                                  * 89F41430
                        *                                              * 89F41440
                        * CALL -                                       * 89F41450
                        *                                              * 89F41460
                        *     BSI  L3 SC010-BASE                       * 89F41470
                        *                                              * 89F41480
                        *     THE ACCUMULATOR AND Q CONTAIN BINARY WORDS * 89F41490
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                        *     TO BE CONVERTED.                         * 89F41500
                        *                                              * 89F41510
                        *     XR1 AND XR2 ARE SAVED AND RESTORED.      * 89F41520
                        *                                              * 89F41530
                        *     XR3 IS THE PSEUDO BASE REGISTER.         * 89F41540
                        *                                              * 89F41550
                        *     THE RESULTS ARE STORED IN TWO FIXED AREAS * 89F41560
                        *     OF THREE WORDS EACH.                     * 89F41570
                        *                                              * 89F41580
                        ************************************************** 89F41590
                        *                                              * 89F41600
0A0F 0 0000             SC010 DC      *-*         ENTRY.                     89F41610
0A10 0 D84D                   STD     SCC02       STORE WORDS TO CONVERT.    89F41620
0A11 0 6945                   STX   1 SC120+1     SAVE INDEX                 89F41630
0A12 0 6A46                   STX   2 SC130+1     REGISTERS.                 89F41640
0A13 0 6B47                   STX   3 SC140+1                                89F41650
                        *                                                    89F41660
                        * AT THIS POINT XR3 IS INTACT AS THE BASE REGISTER. 89F41670
                        *                                                    89F41680
0A14 0 61FF                   LDX   1 -1          USE XR1 AS OVERALL COUNTER 89F41690
0A15 0 C04B                   LD      SCC08       COMPUTE ADDRESS OF STORAGE 89F41700
0A16 0 8301                   A     3 ONE         AREA AND PUT IN INDEX      89F41710
0A17 0 D001                   STO     SC020+1     OPERAND.                   89F41720
0A18 0 6600 0000        SC020 LDX   L2 *-*        XR2 POINTS TO RESULT AREA. 89F41730
0A1A 0 C047                   LD      SCC10       COMPUTE ADDRESS OF SECOND  89F41740
0A1B 0 8301                   A     3 ONE         STORAGE AREA AND           89F41750
0A1C 0 D01F                   STO     SC060+1     INITIALIZE INDEX OPERAND.  89F41760
0A1D 0 C040                   LD      SCC02       LOAD FIRST WORD TO CONVERT 89F41770
0A1E 0 4818                   SKP     +-          AND SKIP IF NON ZERO.      89F41780
0A1F 0 7020                   B       SC070       BRANCH TO LOAD DASHES.     89F41790
0A20 0                  SC030 EQU     *                                      89F41800
0A20 0 6302                   LDX   3 TWO         USE XR3 AS COUNTER.        89F41810
0A21 0 1890                   SRT     16          PREPARE FOR DIVISION.      89F41820
0A22 0                  SC040 EQU     *                                      89F41830
0A22 0 A83D                   D       SCC04       DIVIDE BY 10.              89F41840
0A23 0 4818                   SKP     +-          SKIP IF MORE TO CONVERT.   89F41850
0A24 0 7022                   B       SC080       BRANCH TO ADD LEFT BLANKS. 89F41860
0A25 0 18D0                   RTE     16          EXCHANGE QUOTIENT AND      89F41870
0A26 0 4818                   SKP     +-          REMAINDER, SKIP NOT 0.     89F41880
0A27 0 C038                   LD      SCC04       LOAD 1443 CHARACTER 0.     89F41890
0A28 0 D200                   STO   2 ZERO        STORE AS RIGHT BYTE.       89F41900
0A29 0 1804                   SRA     FOUR        CLEAR ACCUMULATOR.         89F41910
0A2A 0 A835                   D       SCC04       DIVIDE BY 10.              89F41920
0A2B 0 4818                   SKP     +-          SKIP IF MORE TO CONVERT.   89F41930
0A2C 0 701D                   B       SC090       BRANCH TO ADD LEFT BLANKS. 89F41940
0A2D 0 18D0                   RTE     16          EXCHANGE QUOTIENT AND      89F41950
0A2E 0 4818                   SKP     +-          REMAINDER, SKIP NOT ZERO.  89F41960
0A2F 0 C030                   LD      SCC04       LOAD 1443 CHARACTER 0.     89F41970
0A30 0 1008                   SLA     EIGHT       SHIFT TO LEFT BYTE.        89F41980
0A31 0 EA00                   OR    2 ZERO        UPDATE CHARACTER.          89F41990
0A32 0 D200                   STO   2 ZERO                                   89F42000
0A33 0 1810                   SRA     16          CLEAR ACCUMULATOR.         89F42010
0A34 0 72FF                   MDX   2 -1         DECREMENT WORD POINTER.     89F42020
0A35 0 73FF                   MDX   3 -1         DECREMENT COUNTER.         89F42030
0A36 0 70EB                   B       SC040       LOOP.                      89F42040
                        *                                                    89F42050
                        * FIFTH CHARACTER LEFT.                             89F42060
                        *                                                    89F42070
0A37 0 18D0                   RTE     16          MOVE LAST CHARACTER TO     89F42080
0A38 0 D200                   STO   2 ZERO        STORAGE.                   89F42090
0A39 0                  SC050 EQU     *                                      89F42100
0A39 0 7101                   MDX   1 ONE         INCREMENT COUNTER.         89F42110
0A3A 0 701B                   B       SC120       BRANCH IF DONE.            89F42120
                        *                                                    89F42130
                        * INITIALIZE FOR SECOND CONVERSION.                 89F42140
                        *                                                    89F42150
0A3B 0 6600 0000        SC060 LDX   L2 *-*        POINTER TO STORAGE AREA.   89F42160
0A3D 0 C021                   LD      SCC03       LOAD SECOND WORD TO        89F42170
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0A3E 0 4820                SKP     Z           CONVERT AND SKIP IF ZERO.   89F42180
0A3F 0 70E0                B       SC030       BRANCH TO CONVERSION.       89F42190
                     *                                                      89F42200
                     * WORD TO CONVERT IS ZERO.                             89F42210
                     *                                                      89F42220
0A40 0               SC070 EQU     *                                       89F42230
0A40 0 C022                LD      SCC12       MOVE FIVE 1443 CHARACTERS   89F42240
0A41 0 D200                STO   2 ZERO        TO CONVERSION STORAGE.      89F42250
0A42 0 C020                LD      SCC12                                   89F42260
0A43 0 D2FF                STO   2 -1                                      89F42270
0A44 0 C023                LD      SCC92                                   89F42280
0A45 0 D2FE                STO   2 -2                                      89F42290
0A46 0 70F2                B       SC050       RETURN AND CONTINUE.        89F42300
                     *                                                      89F42310
                     * NO MORE CHARACTERS, INSERT LEFT BLANKS.              89F42320
                     *                                                      89F42330
0A47 0               SC080 EQU     *           RIGHT BYTE LAST CHARACTER.  89F42340
0A47 0 18D0                RTE     16          GET LAST CHARACTER.         89F42350
0A48 0 D200                STO   2 ZERO        STORE.                      89F42360
0A49 0 7003                B       SC100       BRANCH TO CONTINUE.         89F42370
0A4A 0               SC090 EQU     *                                       89F42380
0A4A 0 1098                SLT     24          GET LAST CHARACTER TO LEFT  89F42390
0A4B 0 EA00                OR    2 ZERO        BYTE OF ACCUMULATOR.        89F42400
0A4C 0 D200                STO   2 ZERO        UPDATE.                     89F42410
0A4D 0               SC100 EQU     *                                       89F42420
0A4D 0 1810                SRA     16          CLEAR THE ACCUMULATOR.      89F42430
0A4E 0 72FF                MDX   2 -1          DECREMENT STORAGE POINTER.  89F42440
                     *                        DECREMENT COUNTER AND       89F42450
0A4F 0 73FF                MDX   3 -1          SKIP IF ONE MORE WORD.      89F42460
0A50 0 7001                B       SC110       SKIP, TWO MORE WORDS.       89F42470
0A51 0 7002                B       SC115       BRANCH IF ONE MORE WORD.    89F42480
0A52 0               SC110 EQU     *                                       89F42490
0A52 0 D200                STO   2 ZERO        BLANK SECOND WORD OF        89F42500
0A53 0 72FF                MDX   2 -1          STORAGE.                    89F42510
0A54 0                                                                     89F42520
0A54 0 D200          SC115 EQU     *           BLANK FIRST WORD OF         89F42530
0A55 0 70E3                STO   2 ZERO        STORAGE AND RETURN.         89F42540
                           B       SC050                                   89F42550
                     *                                                      89F42560
                     * ROUTINE DONE.                                       89F42570
                     *                                                      89F42580
0A56 0               SC120 EQU     *                                       89F42590
0A56 0 6500 0000           LDX   L1 *-*          RESTORE INDEX             89F42600
0A58 0 6600 0000     SC130 LDX   L2 *-*          REGISTERS.                89F42610
0A5A 0 6700 0000     SC140 LDX   L3 *-*                                    89F42620
0A5C 0 4F80 09AA           B     I3 SC010-BASE   RETURN.                   89F42630
                     *                                                   * 89F42640
                     ******************************************************* 89F42650
                     * CONSTANTS AND WORK AREAS                          * 89F42660
                     *                                                   * 89F42670
                     ******************************************************* 89F42680
                     *                                                   * 89F42690
0A5E   0001          SCC02 BSS   E 1             STORAGE FOR A AND Q, TWO  89F42700
0A5F   0001          SCC03 BSS     1             BINARY NUMBERS TO CONVERT. 89F42710
0A60 0 000A          SCC04 DC      10            DIVISOR, 1443 CHARACTER 0. 89F42720
0A61 0 0A02          SCC08 DC      SCC90+2-BASE                            89F42730
0A62 0 0A06          SCC10 DC      SCC93+2-BASE                            89F42740
0A63 0 2020          SCC12 DC      /2020         1443 CHARACTERS --.       89F42750
0A64   0001                BSS   E 1           SCC90 & SCC93 BUST BE ODD. 89F42760
0A65   0001          SCC90 BSS     1             FIVE CHARACTERS AS        89F42770
0A66   0002          SCC91 BSS     2             RESULTS OF CONVERSION.    89F42780
0A68 0 0020          SCC92 DC      /0020         1443 CHARACTER -.         89F42790
0A69   0001          SCC93 BSS     1                                       89F42800
0A6A   0002          SCC94 BSS     2                                       89F42810
                     *                                                   * 89F42820
                     ******************************************************* 89F42830
                     ******************************************************* 89F42840
                     *                                                   * 89F42850
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                     * CHARACTER FILL SUBROUTINE                        * 89F42860
                     *                                                   * 89F42870
                     ******************************************************* 89F42880
                     *                                                   * 89F42890
                     * THIS SUBROUTINE MOVES CONVERTED CHARACTERS FROM   * 89F42900
                     * THE BUFFERS IN THE CONVERSION ROUTINE TO THE      * 89F42910
                     * I/O AREA INDICATED IN XR2.                        * 89F42920
                     *                                                   * 89F42930
                     * CALL -                                            * 89F42940
                     *                                                   * 89F42950
                     *     BSI  L3 SD010-BASE                            * 89F42960
                     *                                                   * 89F42970
                     *     THE ACCUMULATOR CONTAINS AN MDX INSTRUCTION   * 89F42980
                     *     TO MODIFY XR2.                                * 89F42990
                     *                                                   * 89F43000
                     *     XR1 IS NOT USED.                              * 89F43010
                     *                                                   * 89F43020
                     *     XR2 CONTAINS THE ADDRESS OF THE I/O AREA TO   * 89F43030
                     *     FILL.                                         * 89F43040
                     *                                                   * 89F43050
                     *     XR3 IS THE PSEUDO BASE REGISTER.              * 89F43060
                     *                                                   * 89F43070
                     ******************************************************* 89F43080
                     *                                                   * 89F43090
0A6C 0 0000          SD010 DC      *-*           ENTRY.                    89F43100
                     *                           STORE POINTER MODIFICATION 89F43110
0A6D 0 D006                STO     SD020         INSTRUCTION.              89F43120
0A6E 0 C0F6                LD      SCC90         PICK UP CHARACTERS        89F43130
0A6F 0 D200                STO   2 ZERO          FROM CONVERSION           89F43140
0A70 0 C8F5                LDD     SCC91         BUFFERS AND STORE IN      89F43150
0A71 0 D201                STO   2 ONE           I/O LINE.                 89F43160
0A72 0 18D0                RTE     16                                      89F43170
0A73 0 D202                STO   2 TWO                                     89F43180
0A74 0 7200          SD020 MDX   2 ZERO          THIS INSTRUCTION SUPPLIED 89F43190
0A75 0 C0F3                LD      SCC93         BY CALL ROUTINE.          89F43200
0A76 0 D200                STO   2 ZERO                                    89F43210
0A77 0 C8F2                LDD     SCC94                                   89F43220
0A78 0 D201                STO   2 ONE                                     89F43230
0A79 0 18D0                RTE     16                                      89F43240
0A7A 0 D202                STO   2 TWO                                     89F43250
0A7B 0 4F80 0A07           B     I3 SD010-BASE   RETURN.                   89F43260
                     ******************************************************* 89F43270
                     *                                                   * 89F43280
                     * ADDRESS LINE FAILURE SUMMARY SUBROUTINE           * 89F43290
                     *                                                   * 89F43300
                     ******************************************************* 89F43310
                     *                                                   * 89F43320
                     * THIS SUBROUTINE PRINTS THE ADDRESS LINE SUMMARY   * 89F43330
                     * MATRIX FOR THE STORAGE MODULE INDICATED IN        * 89F43340
                     * HZK01.                                            * 89F43350
                     *                                                   * 89F43360
                     * CALL -                                            * 89F43370
                     *                                                   * 89F43380
                     *     BSI  L3 SE010-BASE                            * 89F43390
                     *                                                   * 89F43400
                     *     XR1 AND XR2 ARE SAVED AND RESTORED.           * 89F43410
                     *                                                   * 89F43420
                     *     XR3 IS THE PSEUDO BASE REGISTER.              * 89F43430
                     *                                                   * 89F43440
                     *     THE BSM ID. IS IN HZK01.                      * 89F43450
                     *                                                   * 89F43460
                     ******************************************************* 89F43470
                     *                                                   * 89F43480
0A7D 0 0000          SE010 DC      *-*           ENTRY.                    89F43490
0A7E 0 4700 06DA           BSI   L3 MA010-BASE   WRITE A SPACE.            89F43500
0A80 0 F000                DC      /F000         SPACE FUNCTION.           89F43510
0A81 0 4700 06DA           BSI   L3 MA010-BASE   WRITE SUMMARY HEADING.    89F43520
0A83 0 0AD7                DC      SEC70-BASE    HEADING MESSAGE.          89F43530
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0A84 0 4700 06DA          BSI  L3 MA010-BASE  WRITE A SPACE.              89F43540
0A86 0 F000               DC     /F000       SPACE FUNCTION.             89F43550
0A87 0 4700 06DA          BSI  L3 MA010-BASE  WRITE FAILURE SUMMARY       89F43560
0A89 0 0AE2               DC     SEC80-BASE   HEADING WHICH IS            89F43570
0A8A 0 4700 06DA          BSI  L3 MA010-BASE  TWO LINES.                  89F43580
0A8C 0 0AEE               DC     SEC90-BASE                               89F43590
0A8D 0 4700 06DA          BSI  L3 MA010-BASE  WRITE A SPACE.              89F43600
0A8F 0 F000               DC     /F000       SPACE FUNCTION.             89F43610
0A90 0 4700 0BAF          BSI  L3 SU010-BASE  ZERO LINE BUFFER.           89F43620
0A92 0 696D               STX    1 SE090+1    SAVE XR1.                   89F43630
0A93 0 6A6E               STX    2 SE092+1    SAVE XR2.                   89F43640
                          *                                               89F43650
                          * FIND SCALE FACTOR.                            89F43660
                          *                                               89F43670
0A94 0 C700 03F5          LD   L3 HZK01-BASE  COMPUTE BASE ADDRESS        89F43680
0A96 0 907B               S      SEC02        OF LINE ADDRESS             89F43690
0A97 0 A07B               M      SEC04        FAILURE STORAGE TABLE       89F43700
0A98 0 18D0               RTE    16           FOR THIS BSM.               89F43710
0A99 0 807A               A      SEC06                                    89F43720
0A9A 0 8301               A    3 ONE                                      89F43730
0A9B 0 D079               STO    SEC08        SAVE.                       89F43740
0A9C 0 9075               S      SEC02        DECREMENT ADDRESS.          89F43750
0A9D 0 D004               STO    SE020+1      STORE IN OPERAND.           89F43760
0A9E 0 1810               SRA    16           CLEAR WORK                  89F43770
0A9F 0 D076               STO    SEC10        AREA.                       89F43780
0AA0 0 6128               LDX  1 40           USE XR1 AS A COUNTER.       89F43790
0AA1 0 C500 0000    SE020 LD   L1 *-*          FIND LARGEST VALUE          89F43800
0AA3 0 9072               S      SEC10        IN TABLE FOR SCALING.       89F43810
0AA4 0 4808               SKP    +                                        89F43820
0AA5 0 7002               B      SE030                                    89F43830
0AA6 0 806F               A      SEC10        RESTORE VALUE AND           89F43840
0AA7 0 D06E               STO    SEC10        SAVE.                       89F43850
0AA8 0                    SE030 EQU    *                                  89F43860
0AA8 0 71FF               MDX  1 -1           DECREMENT COUNTER.          89F43870
0AA9 0 70F7               B      SE020        LOOP.                       89F43880
0AAA 0 C06B               LD     SEC10        COMPUTE                     89F43890
0AAB 0 1890               SRT    16           SCALE FACTOR.               89F43900
0AAC 0 A86A               D      SEC12                                    89F43910
0AAD 0 8064               A      SEC02                                    89F43920
0AAE 0 D067               STO    SEC10                                    89F43930
                          *                                               89F43940
                          * XR2 POINTS TO LINE BUFFER.                    89F43950
                          *                                               89F43960
0AAF 0 C068               LD     SEC14        COMPUTE ABSOLUTE ADDRESS    89F43970
0AB0 0 8301               A    3 ONE          OF LINE BUFFER AND          89F43980
0AB1 0 D001               STO    SE040+1      INITIALIZE XR2.             89F43990
0AB2 0 6600 0000    SE040 LDX  L2 *-*                                     89F44000
0AB4 0 C069               LD     SEC26        INITIALIZE OPERAND          89F44010
0AB5 0 8301               A    3 ONE          THAT POINTS TO LINE         89F44020
0AB6 0 D003               STO    SE050+1      ID.                         89F44030
0AB7 0 D02B               STO    SE080+1                                  89F44040
0AB8 0 61F0               LDX  1 -16          USE XR1 AS A COUNTER.       89F44050
0AB9 0 CD00 0000    SE050 LDD  L1 *-*          MOVE ADDRESS LINE TO        89F44060
0ABB 0 DA00               STD  2 ZERO         I/O BUFFER.                 89F44070
0ABC 0 4048               BSI    SE200        SCALE AND CONVERT.          89F44080
0ABD 0 D203               STO  2 THREE                                    89F44090
0ABE 0 C056               LD     SEC08        INCREMENT INDIRECT          89F44100
0ABF 0 8059               A      SEC16        ADDRESS AND UPDATE.         89F44110
0AC0 0 D054               STO    SEC08                                    89F44120
0AC1 0 4043               BSI    SE200        SCALE AND CONVERT.          89F44130
0AC2 0 D205               STO  2 FIVE                                     89F44140
0AC3 0 C051               LD     SEC08        INCREMENT INDIRECT          89F44150
0AC4 0 8054               A      SEC16        ADDRESS AND UPDATE.         89F44160
0AC5 0 D04F               STO    SEC08                                    89F44170
0AC6 0 403E               BSI    SE200        SCALE AND CONVERT.          89F44180
0AC7 0 D208               STO  2 EIGHT        STORE IN LINE BUFFER.       89F44190
0AC8 0 C04C               LD     SEC08        INCREMENT INDIRECT          89F44200
0AC9 0 804F               A      SEC16        ADDRESS AND UPDATE.         89F44210
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0ACA 0 D04A               STO    SEC08                                    89F44220
0ACB 0 4039               BSI    SE200        SCALE AND CONVERT.          89F44230
0ACC 0 D20A               STO  2 TEN          STORE IN LINE BUFFER.       89F44240
                          *                                               89F44250
                          * LINE FULL.                                    89F44260
                          *                                               89F44270
0ACD 0 4700 06DA          BSI  L3 MA010-BASE  WRITE LINE.                 89F44280
0ACF 0 0BC0               DC     SUC80-BASE   MESSAGE.                    89F44290
0AD0 0 7102               MDX  1 TWO                                      89F44300
0AD1 0 7001               B      SE060        SKIP TO LOOP.               89F44310
0AD2 0 7004               B      SE070        BRANCH IF DONE.             89F44320
0AD3 0                    SE060 EQU    *                                  89F44330
0AD3 0 C041               LD     SEC08        READJUST INDIRECT           89F44340
0AD4 0 9045               S      SEC18        ADDRESS.                    89F44350
0AD5 0 D03F               STO    SEC08                                    89F44360
0AD6 0 70E2               B      SE050        LOOP.                       89F44370
                          *                                               89F44380
                          * DONE WITH FIRST HALF OF MATRIX PRINTOUT.      89F44390
                          *                                               89F44400
0AD7 0                    SE070 EQU    *                                  89F44410
0AD7 0 4700 06DA          BSI  L3 MA010-BASE  WRITE SPACE.                89F44420
0AD9 0 F000               DC     /F000       SPACE FUNCTION.             89F44430
0ADA 0 61F0               LDX  1 -16          USE XR1 AS A COUNTER.       89F44440
0ADB 0 C03F               LD     SEC20        PUT ASTERISK IN UNUSED      89F44450
0ADC 0 D203               STO  2 THREE        POSITIONS.                  89F44460
0ADD 0 D205               STO  2 FIVE                                     89F44470
0ADE 0 D208               STO  2 EIGHT                                    89F44480
0ADF 0                    SE075 EQU    *                                  89F44490
0ADF 0 C035               LD     SEC08        INCREMENT INDIRECT          89F44500
0AE0 0 8031               A      SEC02        ADDRESS AND UPDATE.         89F44510
0AE1 0 D033               STO    SEC08                                    89F44520
0AE2 0 CD00 0000    SE080 LDD  L1 *-*          MOVE ADDR. LINE TO          89F44530
0AE4 0 E837               OR     SEC22        I/O BUFFER.                 89F44540
0AE5 0 DA00               STD  2 ZERO                                     89F44550
0AE6 0 401E               BSI    SE200        SCALE AND CONVERT.          89F44560
0AE7 0 D20A               STO  2 TEN          STORE IN LINE BUFFER.       89F44570
0AE8 0 4700 06DA          BSI  L3 MA010-BASE  WRITE LINE.                 89F44580
0AEA 0 0BC0               DC     SUC80-BASE   MESSAGE.                    89F44590
0AEB 0 7102               MDX  1 TWO          DECREMENT COUNTER.          89F44600
0AEC 0 70F2               B      SE075        LOOP.                       89F44610
                          *                                               89F44620
                          * SUMMARY DONE.                                 89F44630
                          *                                               89F44640
0AED 0 4700 06DA          BSI  L3 MA010-BASE  WRITE A SPACE.              89F44650
0AEF 0 F000               DC     /F000       SPACE FUNCTION.             89F44660
0AF0 0 C025               LD     SEC10        CONVERT SCALE FACTOR        89F44670
0AF1 0 4700 09AA          BSI  L3 SC010-BASE  AND FILL.                   89F44680
0AF3 0 C700 0A00          LD   L3 SCC90-BASE                              89F44690
0AF5 0 D033               STO    SEC46                                    89F44700
0AF6 0 CF00 0A01          LDD  L3 SCC91-BASE                              89F44710
0AF8 0 D831               STD    SEC46+1                                  89F44720
0AF9 0 4700 06DA          BSI  L3 MA010-BASE  WRITE LINE.                 89F44730
0AFB 0 0ABB               DC     SEC40-BASE   MESSAGE.                    89F44740
0AFC 0 4700 06DA          BSI  L3 MA010-BASE  WRITE A SPACE.              89F44750
0AFE 0 F000               DC     /F000       SPACE FUNCTION.             89F44760
0AFF 0 6500 0000    SE090 LDX  L1 *-*          RESTORE XR1.                89F44770
0B01 0 6600 0000    SE092 LDX  L2 *-*          RESTORE XR2.                89F44780
0B03 0 4F80 0A18          B    I3 SE010-BASE  RETURN.                     89F44790
                          *                                               89F44800
                          * SCALE AND CONVERT CHARACTER.                  89F44810
                          *                                               89F44820
0B05 0 0000         SE200 DC     *-*          ENTRY.                      89F44830
0B06 0 C780 0AB0          LD   I3 SEC08-BASE  GET VALUE TO SCALE.         89F44840
0B08 0 4808               SKP    +            SKIP IF VALUE TO SCALE.     89F44850
0B09 0 7006               B      SE220        NO ERRORS, LOAD -.          89F44860
0B0A 0 1890               SRT    16           SCALE VALUE.                89F44870
0B0B 0 A80A               D      SEC10                                    89F44880
0B0C 0 4808               SKP    +            SKIP IF NOT ZERO.           89F44890
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0B0D 0 C004                LD     SEC02      THERE WAS AT LEAST 1 ERROR 89F44900
0B0E 0                     *                                            89F44910
0B0E 0 4F80 0AA0 SE210 EQU B    I3 SE200-BASE  RETURN.                   89F44920
                           *                                            89F44930
                           * PUT DASH IN OUTPUT, NO TALLEY.             89F44940
                           *                                            89F44950
0B10 0                     SE220 EQU  *                                 89F44960
0B10 0 C00C                LD     SEC24      LOAD DASH.                 89F44970
0B11 0 70FC                B      SE210      BRANCH TO EXIT.            89F44980
                           ********************************************* 89F44990
                           *                                           * 89F45000
                           * CONSTANTS AND WORK AREAS                  * 89F45010
                           *                                           * 89F45020
                           ********************************************* 89F45030
                           *                                           * 89F45040
0B12 0 0001                SEC02 DC   1          ONE.                   89F45050
0B13 0 0028                SEC04 DC   40         NO. OF DWRDS IN EACH TABLE 89F45060
0B14 0 0E0D                SEC06 DC   PXK30-BASE  BASE OF TABLE.        89F45070
0B15   0001                SEC08 BSS  1          INDIRECT ADDRESS TO TABLE. 89F45080
0B16   0001                SEC10 BSS  1          SCALE FACTOR.          89F45090
0B17 0 000A                SEC12 DC   10         SCALING VALUE.         89F45100
0B18 0 0BC1                SEC14 DC   SUC82-BASE  RELATIVE ADDRESS.     89F45110
0B19 0 0008                SEC16 DC   8          EIGHT.                 89F45120
0B1A 0 0017                SEC18 DC   23         TWENTY THREE.          89F45130
0B1B 0 002C                SEC20 DC   /002C      1443 CHARACTER, *.     89F45140
0B1C 0 0100                SEC22 DC   /0100      1443 CHARACTER 1, LEFT. 89F45150
0B1D 0 0020                SEC24 DC   /0020      1443 CHARACTER, -.     89F45160
0B1E 0 0AD7                SEC26 DC   SEC56-BASE  RELATIVE ADDRESS.     89F45170
0B20   0000                      BSS  E 0        FORCE EVEN BOUNDARY.   89F45180
0B20 0 000B                SEC40 DC   11                                 89F45190
0B21 0 0000                      DC   /0000                             89F45200
0B22 0 1233                      DC   /1233      SC                     89F45210
0B23 0 3123                      DC   /3123      AL                     89F45220
0B24 0 3500                      DC   /3500      E                      89F45230
0B25 0 3631                      DC   /3631      FA                     89F45240
0B26 0 3313                      DC   /3313      CT                     89F45250
0B27 0 2629                      DC   /2629      OR                     89F45260
0B28 0 000B                      DC   /000B       =                     89F45270
0B29 0 0000                SEC46 DC   /0000       X                     89F45280
0B2A 0 0000                      DC   /0000      XX   MUST BE EVEN ADDRESS. 89F45290
0B2B 0 0000                      DC   /0000      XX                     89F45300
0B2C 0 000A                SEC54 DC   /000A       0, 1443 CHARACTER 0.  89F45310
0B2D 0 0A0A                      DC   /0A0A      00                     89F45320
0B2E 0 000A                      DC   /000A       0                     89F45330
0B2F 0 0A01                      DC   /0A01      01                     89F45340
0B30 0 000A                      DC   /000A       0                     89F45350
0B31 0 010A                      DC   /010A      10                     89F45360
0B32 0 000A                      DC   /000A       0                     89F45370
0B33 0 0101                      DC   /0101      11                     89F45380
0B34 0 0001                      DC   /0001       1                     89F45390
0B35 0 0A0A                      DC   /0A0A      00                     89F45400
0B36 0 0001                      DC   /0001       1                     89F45410
0B37 0 0A01                      DC   /0A01      01                     89F45420
0B38 0 0001                      DC   /0001       1                     89F45430
0B39 0 010A                      DC   /010A      10                     89F45440
0B3A 0 0001                      DC   /0001       1                     89F45450
0B3B 0 0101                      DC   /0101      11                     89F45460
0B3C 0                     SEC56 EQU  *                                 89F45470
0B3C 0 000A                SEC70 DC   10         SUMMARY HEADING.       89F45480
0B3D 0 3631                      DC   /3631      FA                     89F45490
0B3E 0 3923                      DC   /3923      IL                     89F45500
0B3F 0 3B00                      DC   /3B00       .                     89F45510
0B40 0 3218                      DC   /3218      BY                     89F45520
0B41 0 0031                      DC   /0031       A                     89F45530
0B42 0 3434                      DC   /3434      DD                     89F45540
0B43 0 293B                      DC   /293B      R.                     89F45550
0B44 0 0023                      DC   /0023       L                     89F45560
0B45 0 3925                      DC   /3925      IN                     89F45570
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0B46 0 3500                      DC   /3500      E                      89F45580
0B47 0 000B                SEC80 DC   11         HEADING MESSAGE.       89F45590
0B48 0 0000                      DC   /0000                             89F45600
0B49 0 0000                      DC   /0000                             89F45610
0B4A 0 0000                      DC   /0000                             89F45620
0B4B 0 3839                      DC   /3839      HI                     89F45630
0B4C 0 0000                      DC   /0000                             89F45640
0B4D 0 2326                      DC   /2326      LO                     89F45650
0B4E 0 0000                      DC   /0000                             89F45660
0B4F 0 0000                      DC   /0000                             89F45670
0B50 0 3839                      DC   /3839      HI                     89F45680
0B51 0 0000                      DC   /0000                             89F45690
0B52 0 2326                      DC   /2326      LO                     89F45700
0B53 0 000B                SEC90 DC   11         HEADING MESSAGE.       89F45710
0B54 0 0000                      DC   /0000                             89F45720
0B55 0 0000                      DC   /0000                             89F45730
0B56 0 0000                      DC   /0000                             89F45740
0B57 0 0017                      DC   /0017      X                      89F45750
0B58 0 0000                      DC   /0000                             89F45760
0B59 0 0017                      DC   /0017      X                      89F45770
0B5A 0 0000                      DC   /0000                             89F45780
0B5B 0 0000                      DC   /0000                             89F45790
0B5C 0 0018                      DC   /0018      Y                      89F45800
0B5D 0 0000                      DC   /0000                             89F45810
0B5E 0 0018                      DC   /0018      Y                      89F45820
                           *                                           * 89F45830
                           ********************************************* 89F45840
                           ********************************************* 89F45850
                           *                                           * 89F45860
                           * SENSE/INHIBIT SUMMARY PRINT SUBROUTINE    * 89F45870
                           *                                           * 89F45880
                           ********************************************* 89F45890
                           *                                           * 89F45900
                           * THIS SUBROUTINE PRINTS ONE LINE FOR EACH BSM * 89F45910
                           * LOG SUMMARIZING FAILURES BY SENSE/INHIBIT BLOCK.* 89F45920
                           *                                           * 89F45930
                           * CALL -                                    * 89F45940
                           *                                           * 89F45950
                           *     BSI  L3 SI010-BASE                    * 89F45960
                           *                                           * 89F45970
                           *     XR1 IS NOT USED.                      * 89F45980
                           *                                           * 89F45990
                           *     XR2 IS SAVED AND RESTORED.            * 89F46000
                           *                                           * 89F46010
                           *     XR3 IS THE PSEUDO BASE REGISTER.      * 89F46020
                           *                                           * 89F46030
                           *     THE BSM ID. IS IN HZK01.              * 89F46040
                           *                                           * 89F46050
                           ********************************************* 89F46060
                           *                                           * 89F46070
0B5F 0 0000                SI010 DC   *-*        ENTRY.                 89F46080
0B60 0 4700 06DA                 BSI  L3 MA010-BASE  WRITE A SPACE.     89F46090
0B62 0 F000                      DC   /F000      SPACE FUNCTION.        89F46100
0B63 0 4700 06DA                 BSI  L3 MA010-BASE WRITE THE HEADING.  89F46110
0B65 0 0B24                      DC   SIC80-BASE  HEADING.              89F46120
0B66 0 4700 06DA                 BSI  L3 MA010-BASE  WRITE A SPACE.     89F46130
0B68 0 F000                      DC   /F000      SPACE FUNCTION.        89F46140
0B69 0 6A19                      STX   2 SI040+1  SAVE XR2.              89F46150
0B6A 0 C01B                      LD     SIC02    COMPUTE STARTING ADDRESS 89F46160
0B6B 0 8301                      A      3 ONE    FOR FILL AND LOAD INTO  89F46170
0B6C 0 D001                      STO    SI020+1  XR2.                    89F46180
0B6D 0 6600 0000           SI020 LDX  L2 *-*                            89F46190
0B6F 0 C700 03F5                 LD   L3 HZK01-BASE  COMPUTE ADDRESS OF 89F46200
0B71 0 90A0                      S      SEC02    ENTRY IN STORAGE AREA.  89F46210
0B72 0 1001                      SLA    ONE                             89F46220
0B73 0 8013                      A      SIC04                           89F46230
0B74 0 D001                      STO    SI030+1                         89F46240
0B75 0 CF00 0000           SI030 LDD  L3 *-*        LOAD COUNTERS.      89F46250
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0B77 0 4700 09AA          BSI  L3 SC010-BASE  CONVERT TO 1443 CHAR.      89F46260
0B79 0 C00E                LD     SIC08       PUT CONVERTED CHARACTERS   89F46270
0B7A 0 4700 0A07          BSI  L3 SD010-BASE   IN BUFFER LINE.           89F46280
                          *                                              89F46290
                          * LINE IS COMPLETE                             89F46300
                          *                                              89F46310
0B7C 0 4700 06DA          BSI  L3 MA010-BASE  WRITE LINE.                89F46320
0B7E 0 0B30                DC     SIC90-BASE  MESSAGE.                    89F46330
0B7F 0 4700 06DA          BSI  L3 MA010-BASE  WRITE A SPACE.             89F46340
0B81 0 F000                DC     /F000       SPACE FUNCTION.           89F46350
0B82 0 6600 0000  SI040 LDX  L2 *-*          RESTORE XR2.               89F46360
0B84 0 4F80 0AFA          B    I3 SI010-BASE  RETURN.                    89F46370
                          ************************************************ 89F46380
                          *                                            * 89F46390
                          * CONSTANTS AND WORK AREAS                   * 89F46400
                          *                                            * 89F46410
                          ************************************************ 89F46420
                          *                                            * 89F46430
                          *                    RELATIVE ADDRESS OF       89F46440
0B86 0 0B36       SIC02 DC     SIC90+6-BASE  OUTPUT AREA TO FILL.        89F46450
0B87 0 0F4D       SIC04 DC     PXK40-BASE  RELATIVE ADDRESS OF STOR.      89F46460
0B88 0 7208       SIC08 MDX    2 EIGHT     INSTRUCTION FOR FILL RTN.     89F46470
0B89 0 000B       SIC80 DC     11          HEADING.                      89F46480
0B8A 0 3631                DC     /3631       FA                        89F46490
0B8B 0 3923                DC     /3923       IL                        89F46500
0B8C 0 1429                DC     /1429       UR                        89F46510
0B8D 0 3500                DC     /3500       E                         89F46520
0B8E 0 3218                DC     /3218       BY                        89F46530
0B8F 0 0004                DC     /0004        4                        89F46540
0B90 0 2200                DC     /2200       K                         89F46550
0B91 0 1235                DC     /1235       SE                        89F46560
0B92 0 3724                DC     /3724       GM                        89F46570
0B93 0 3525                DC     /3525       EN                        89F46580
0B94 0 1300                DC     /1300       T                         89F46590
0B95 0 0010       SIC90 DC     16          MESSAGE.                      89F46600
0B96 0 0000                DC     /0000                                 89F46610
0B97 0 0023                DC     /0023        L                        89F46620
0B98 0 2600                DC     /2600       0                         89F46630
0B99 0 0422                DC     /0422       4K                        89F46640
0B9A 0 000B                DC     /000B        =                        89F46650
0B9B 0 0000                DC     /0000        X                        89F46660
0B9C 0 0000                DC     /0000       XX                        89F46670
0B9D 0 0000                DC     /0000       XX                        89F46680
0B9E 0 0000                DC     /0000                                 89F46690
0B9F 0 0038                DC     /0038        H                        89F46700
0BA0 0 3900                DC     /3900       I                         89F46710
0BA1 0 0422                DC     /0422       4K                        89F46720
0BA2 0 000B                DC     /000B        =                        89F46730
0BA3 0 0000                DC     /0000        Y                        89F46740
0BA4 0 0000                DC     /0000       YY                        89F46750
0BA5 0 0000                DC     /0000       YY                        89F46760
                          *                                            * 89F46770
                          ************************************************ 89F46780
                          ************************************************ 89F46790
                          *                                            * 89F46800
                          * PATTERN FAILURE AND LOOP SUMMARY SUBROUTINE * 89F46810
                          *                                            * 89F46820
                          ************************************************ 89F46830
                          *                                            * 89F46840
                          * THIS SUBROUTINE PRINTS A LOG OF LOOPS AND  * 89F46850
                          * FAILURES BY PATTERN TEST FOR EACH BSM.     * 89F46860
                          *                                            * 89F46870
                          * CALL -                                     * 89F46880
                          *                                            * 89F46890
                          *     BSI  L3 SL010-BASE                     * 89F46900
                          *                                            * 89F46910
                          *     XR1 AND XR2 ARE SAVED AND RESTORED.    * 89F46920
                          *                                            * 89F46930
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                          *     XR3 IS THE PSEUDO BASE REGISTER.       * 89F46940
                          *                                            * 89F46950
                          *     THE BSM ID. IS IN HZK01.               * 89F46960
                          *                                            * 89F46970
                          ************************************************ 89F46980
                          *                                            * 89F46990
0BA6 0 0000       SL010 DC     *-*         ENTRY.                        89F47000
0BA7 0 4700 06DA          BSI  L3 MA010-BASE  WRITE A SPACE.             89F47010
0BA9 0 F000                DC     /F000       SPACE FUNCTION.           89F47020
0BAA 0 4700 06DA          BSI  L3 MA010-BASE  WRITE SUMMARY HEADING.     89F47030
0BAC 0 0B96                DC     SLC70-BASE  HEADING.                  89F47040
0BAD 0 4700 06DA          BSI  L3 MA010-BASE  WRITE A SPACE.            89F47050
0BAF 0 F000                DC     /F000       SPACE FUNCTION.           89F47060
0BB0 0 4700 06DA          BSI  L3 MA010-BASE  WRITE HEADING.            89F47070
0BB2 0 0BA3                DC     SLC80-BASE  HEADING.                  89F47080
0BB3 0 4700 06DA          BSI  L3 MA010-BASE  WRITE A SPACE.            89F47090
0BB5 0 F000                DC     /F000       SPACE FUNCTION.           89F47100
0BB6 0 4700 0BAF          BSI  L3 SU010-BASE  ZERO LINE BUFFER.         89F47110
0BB8 0 6932                STX    1 SL050+1   SAVE XR1.                 89F47120
0BB9 0 6A33                STX    2 SL060+1   SAVE XR2.                 89F47130
0BBA 0 6103                LDX    1 SLC04     XR1 IS COUNTER.           89F47140
0BBB 0 C034                LD     SLC02       COMPUTE ADDRESS OF        89F47150
0BBC 0 8301                A      3 ONE       LINE BUFFER FILL          89F47160
0BBD 0 D001                STO    SL020+1     AREA.                     89F47170
0BBE 0 6600 0000  SL020 LDX  L2 *-*                                     89F47180
0BC0 0 C700 03F5          LD   L3 HZK01-BASE  COMPUTE BASE ADDRESSES    89F47190
0BC2 0 9031                S      SLC12       OF LOOP AND FAILURE       89F47200
0BC3 0 A031                M      SLC14       COUNTER TABLES.           89F47210
0BC4 0 18D0                RTE    16                                    89F47220
0BC5 0 8301                A      3 ONE                                 89F47230
0BC6 0 D030                STO    SLC18       SAVE TEMPORARILY.         89F47240
0BC7 0 802A                A      SLC08       BUILD ADDRESSES AND       89F47250
0BC8 0 D02D                STO    SLC16       SAVE FOR INDIRECT         89F47260
0BC9 0 C02D                LD     SLC18       ADDRESSING.               89F47270
0BCA 0 8028                A      SLC10                                 89F47280
0BCB 0 D02B                STO    SLC18                                 89F47290
                          *                                             89F47300
                          * BUILD A LINE.                               89F47310
                          *                                             89F47320
0BCC 0            SL030 EQU    *                                        89F47330
0BCC 0 692B                STX    1 SLC20     COMPUTE TEST ID.          89F47340
0BCD 0 C023                LD     SLC06       NUMBER, CONVERT IT AND    89F47350
0BCE 0 9029                S      SLC20       STORE IN LINE BUFFER.     89F47360
0BCF 0 4700 0437          BSI  L3 IC010-BASE  CONVERT TO ONE 1443       89F47370
0BD1 0 E028                AND    SLC24       CHARACTER.                89F47380
0BD2 0 D200                STO    2 ZERO                                89F47390
0BD3 0 7203                MDX    2 THREE     INCREMENT I/O AREA PTR.   89F47400
0BD4 0 C780 0B91          LD   I3 SLC16-BASE  LOAD LOOP COUNTER.        89F47410
0BD6 0 18D0                RTE    16          MOVE TO Q.                89F47420
0BD7 0 C780 0B92          LD   I3 SLC18-BASE  LOAD FAILURE COUNTER.     89F47430
0BD9 0 4700 09AA          BSI  L3 SC010-BASE  CONVERT TO 1443 CODE.     89F47440
0BDB 0 C01D                LD     SLC22       PUT CHARACTERS IN         89F47450
0BDC 0 4700 0A07          BSI  L3 SD010-BASE  I/O BUFFER.               89F47460
                          *                                             89F47470
                          * LINE COMPLETE, WRITE IT.                    89F47480
                          *                                             89F47490
0BDE 0 4700 06DA          BSI  L3 MA010-BASE  WRITE LINE.               89F47500
0BE0 0 0BC0                DC     SUC80-BASE  MESSAGE.                  89F47510
0BE1 0 C014                LD     SLC16       INCREMENT AND UPDATE      89F47520
0BE2 0 8011                A      SLC12       INDIRECT ADDRESSES.       89F47530
0BE3 0 D012                STO    SLC16                                 89F47540
0BE4 0 C012                LD     SLC18                                 89F47550
0BE5 0 800E                A      SLC12                                 89F47560
0BE6 0 D010                STO    SLC18                                 89F47570
0BE7 0 72F9                MDX    2 -7        RESTORE BUFFER POINTER.   89F47580
0BE8 0 71FF                MDX    1 -1        DECREMENT COUNTER.        89F47590
0BE9 0 70E2                B      SL030       LOOP.                     89F47600
0BEA 0 6500 0000  SL050 LDX  L1 *-*          RESTORE XR1.              89F47610
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0BEC 0 6600 0000   SL060 LDX   L2 *-*        RESTORE XR2.                    89F47620
0BEE 0 4F80 0B41         B     I3 SL010-BASE  RETURN.                        89F47630
                  ************************************************** 89F47640
                  *                                                * 89F47650
                  * CONSTANTS AND WORK AREAS                       * 89F47660
                  *                                                * 89F47670
                  ************************************************** 89F47680
                  *                                                * 89F47690
0BF0 0 0BC2       SLC02 DC       SUC84-BASE                         89F47700
                  *                          PATTERN TEST COUNT.  IF 89F47710
                  *                          THE NUMBER OF PATTERN   89F47720
                  *                          TESTS CHANGE, SLC04 SHOULD 89F47730
0003 0            SLC04 EQU      3           BE CHANGED.             89F47740
0BF1 0 0003       SLC06 DC       3           PATTERN COUNT.          89F47750
                  *                          RELATIVE ADDRESS OF BASE 89F47760
0BF2 0 0F75       SLC08 DC       PXK60-BASE  OF LOOP COUNTER TABLE.  89F47770
                  *                          RELATIVE ADDRESS OF BASE 89F47780
0BF3 0 0F5D       SLC10 DC       PXK50-BASE  OF FAILURE COUNTER TABLE. 89F47790
0BF4 0 0001       SLC12 DC       1           ONE.                    89F47800
0BF5 0 0003       SLC14 DC       3           NO. OF PATTERN TEST LOGS. 89F47810
0BF6   0001       SLC16 BSS      1           INDIRECT ADDRESS, PXK60. 89F47820
0BF7   0001       SLC18 BSS      1           INDIRECT ADDRESS, PXK50. 89F47830
0BF8   0001       SLC20 BSS      1           WORK AREA.              89F47840
0BF9 0 7204       SLC22 MDX    2 FOUR        INSTRUCTION FOR FILL RTN. 89F47850
0BFA 0 00FF       SLC24 DC       /00FF       MASK TO LEAVE RIGHT BYTE. 89F47860
0BFB 0 000C       SLC70 DC       12          SUMMARY HEADING.        89F47870
0BFC 0 3631             DC       /3631       FA                      89F47880
0BFD 0 3923             DC       /3923       IL                      89F47890
0BFE 0 1429             DC       /1429       UR                      89F47900
0BFF 0 3512             DC       /3512       ES                      89F47910
0C00 0 0032             DC       /0032        B                      89F47920
0C01 0 1800             DC       /1800       Y                       89F47930
0C02 0 2731             DC       /2731       PA                      89F47940
0C03 0 1313             DC       /1313       TT                      89F47950
0C04 0 3529             DC       /3529       ER                      89F47960
0C05 0 2500             DC       /2500       N                       89F47970
0C06 0 1335             DC       /1335       TE                      89F47980
0C07 0 1213             DC       /1213       ST                      89F47990
0C08 0 000B       SLC80 DC       11          HEADING                 89F48000
0C09 0 0029             DC       /0029        R                      89F48010
0C0A 0 1325             DC       /1325       TN                      89F48020
0C0B 0 3B00             DC       /3B00       .                       89F48030
0C0C 0 0036             DC       /0036        F                      89F48040
0C0D 0 3139             DC       /3139       AI                      89F48050
0C0E 0 2314             DC       /2314       LU                      89F48060
0C0F 0 2935             DC       /2935       RE                      89F48070
0C10 0 1200             DC       /1200       S                       89F48080
0C11 0 0023             DC       /0023        L                      89F48090
0C12 0 2626             DC       /2626       00                      89F48100
0C13 0 2712             DC       /2712       PS                      89F48110
                  *                                                * 89F48120
                  ************************************************** 89F48130
                  ************************************************** 89F48140
                  *                                                * 89F48150
                  * ZERO LINE BUFFER SUBROUTINE                    * 89F48160
                  *                                                * 89F48170
                  ************************************************** 89F48180
                  *                                                * 89F48190
                  * THIS SUBROUTINE ZEROS THE LINE BUFFER THAT IS  * 89F48200
                  * COMMON TO ALL SUMMARY SUBROUTINES.             * 89F48210
                  *                                                * 89F48220
                  * CALL -                                         * 89F48230
                  *                                                * 89F48240
                  *      BSI  L3 SU010-BASE                        * 89F48250
                  *                                                * 89F48260
                  *      XR1 IS NOT USED.                          * 89F48270
                  *                                                * 89F48280
                  *      XR2 IS SAVED AND RESTORED.                * 89F48290
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                  *                                                * 89F48300
                  *      XR3 IS THE PSEUDO BASE REGISTER.          * 89F48310
                  *                                                * 89F48320
                  ************************************************** 89F48330
                  *                                                * 89F48340
0C14 0 0000       SU010 DC       *-*         ENTRY.                  89F48350
0C15 0 6A0A             STX    2 SU050+1     SAVE XR2.               89F48360
0C16 0 6225             LDX    2 SUC02       XR2 IS USED AS A COUNTER. 89F48370
0C17 0 C00C             LD       SUC04       COMPUTE ABSOLUTE BASE   89F48380
0C18 0 8301             A      3 ONE         ADDRESS OF LINE BUFFER  89F48390
0C19 0 D002             STO      SU020+1     FOR OPERAND.            89F48400
0C1A 0 1810             SRA      16          ZERO ACCUMULATOR.       89F48410
0C1B 0 D600 0000  SU020 STO    L2 *-*        STORE A ZERO INTO EACH  89F48420
0C1D 0 72FF             MDX    2 -1          POSITION.               89F48430
0C1E 0 70FC             B        SU020                                 89F48440
0C1F 0 6600 0000  SU050 LDX    L2 *-*        RESTORE XR2.            89F48450
0C21 0 4F80 0BAF        B      I3 SU010-BASE RETURN.                 89F48460
                  ************************************************** 89F48470
                  *                                                * 89F48480
                  * CONSTANTS, WORK AREAS AND LINE BUFFER          * 89F48490
                  *                                                * 89F48500
                  ************************************************** 89F48510
                  *                                                * 89F48520
0025 0            SUC02 EQU      37          NO. OF WORDS IN BUFFER. 89F48530
0C24   0000             BSS    E 0           FORCE EVEN BOUNDARY.    89F48540
                  *                          RELATIVE BASE ADDRESS OF 89F48550
0C24 0 0BC0       SUC04 DC       SUC80-BASE  LINE BUFFER FOR ZEROING. 89F48560
                  *                          THIS ADDRESS MUST BE ODD. 89F48570
0C25 0 0025       SUC80 DC       37          WORD COUNT FOR BUFFER.  89F48580
0C26   0001       SUC82 BSS      1           XX      XX              89F48590
0C27   0001       SUC84 BSS      1           YY    X   XX    XX        89F48600
0C28   0001             BSS      1                                   89F48610
0C29   0001       SUC86 BSS      1           AA    -   W             89F48620
0C2A   0001             BSS      1           A     --        Y       89F48630
0C2B   0001             BSS      1           BB    --    X   YY      89F48640
0C2C   0001             BSS      1           B               YY      89F48650
0C2D   0001             BSS      1           CC    -               89F48660
0C2E   0001             BSS      1           C     --    Y   Z       89F48670
0C2F   0001             BSS      1           DD    --        ZZ      89F48680
0C30   0001             BSS      1           D           Z   ZZ      89F48690
0C31   0001             BSS      1           EE                      89F48700
0C32   0001             BSS      1           EE                      89F48710
0C33   0001             BSS      1                                   89F48720
0C34   0001       SUC88 BSS      1           TT                      89F48730
0C35   0001             BSS      1           TT                      89F48740
0C36   0001             BSS      1            T                      89F48750
0C37   0001             BSS      1           TT                      89F48760
0C38   0001             BSS      1           T                       89F48770
0C39   0001             BSS      1           TT                      89F48780
0C3A   0001             BSS      1           TT                      89F48790
0C3B   0001             BSS      1            T                      89F48800
0C3C   0001             BSS      1           TT                      89F48810
0C3D   0001             BSS      1           T                       89F48820
0C3E   0001             BSS      1           SP                      89F48830
0C3F   0001             BSS      1                                   89F48840
0C40   0001       SUC90 BSS      1           FF                      89F48850
0C41   0001             BSS      1           FF                      89F48860
0C42   0001             BSS      1            F                      89F48870
0C43   0001             BSS      1           FF                      89F48880
0C44   0001             BSS      1           F                       89F48890
0C45   0001             BSS      1           FF                      89F48900
0C46   0001             BSS      1           FF                      89F48910
0C47   0001             BSS      1            F                      89F48920
0C48   0001             BSS      1           FF                      89F48930
0C49   0001             BSS      1           F                       89F48940
0C4A   0001             BSS      1           SP                      89F48950
                  *                                                * 89F48960
                  ************************************************** 89F48970
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                        ************************************************** 89F48980
                        *                                                * 89F48990
                        * IMMEDIATE ERROR LOG SUBROUTINE                 * 89F49000
                        *                                                * 89F49010
                        ************************************************** 89F49020
                        *                                                * 89F49030
                        * THIS SUBROUTINE PRINTS THE IMMEDIATE ERROR LOG. * 89F49040
                        * IT PRINTS A HEADING IF IT HAS NOT BEEN PRINTED. * 89F49050
                        *                                                * 89F49060
                        * CALL -                                         * 89F49070
                        *                                                * 89F49080
                        *     BSI  L3 SV010-BASE                         * 89F49090
                        *                                                * 89F49100
                        *     XR1 AND XR2 ARE NOT USED.                  * 89F49110
                        *                                                * 89F49120
                        *     XR3 IS THE PSEUDO BASE REGISTER            * 89F49130
                        *                                                * 89F49140
                        *                                  3/14/69   *   89F49150
                        *                                                * 89F49160
                        ************************************************** 89F49170
                        *                                                * 89F49180
0C4B 0 0000             SV010 DC      *-*         ENTRY                    89F49190
0C4C 0 D8D9                   STD     SUC82       FILL IN ERROR CODE.      89F49200
0C4D 0 C013                   LD      SVC02       TEST HEADING SWITCH      89F49210
0C4E 0 4820                   SKP     Z           SKIP NOT SET, WRITE HDNG. 89F49220
0C4F 0 700A                   B       SV020       BRANCH TO CONTINUE.      89F49230
0C50 0 6810                   STX   0 SVC02       TURN SWITCH ON.          89F49240
0C51 0 4700 06DA              BSI   L3 MA010-BASE  SPACE ONE LINE.         89F49250
0C53 0 F000                   DC      /F000       SPACE FUNCTION.          89F49260
0C54 0 4700 06DA              BSI   L3 MA010-BASE  WRITE HEADING.         89F49270
0C56 0 0C45                   DC      MSG07-BASE  MESSAGE.                 89F49280
0C57 0 4700 06DA              BSI   L3 MA010-BASE  SPACE ONE LINE.         89F49290
0C59 0 F000                   DC      /F000       SPACE FUNCTION.          89F49300
0C5A 0                  SV020 EQU     *                                    89F49310
0C5A 0 C007                   LD      SVC04       PUT WORD COUNT IN        89F49320
0C5B 0 D0C9                   STO     SUC80       LINE BUFFER.             89F49330
0C5C 0 4700 06DA              BSI   L3 MA010-BASE  WRITE IMMEDIATE         89F49340
0C5E 0 0BC0                   DC      SUC80-BASE  ERROR LOG.               89F49350
0C5F 0 4F80 0BE6              B     I3 SV010-BASE  RETURN.                 89F49360
                        ************************************************** 89F49370
                        *                                                * 89F49380
                        * CONSTANTS AND WORK AREAS                       * 89F49390
                        *                                                * 89F49400
                        ************************************************** 89F49410
                        *                                                * 89F49420
0C61   0001             SVC02 BSS     1           HEADING SWITCH.          89F49430
0C62 0 0025             SVC04 DC      37          WORD COUNT.              89F49440
                        *                                                * 89F49450
                        ************************************************** 89F49460
                        ************************************************** 89F49470
                        *                                                * 89F49480
                        * SET WORST CASE PATTERN                         * 89F49490
                        *                                                * 89F49500
                        ************************************************** 89F49510
                        *                                                * 89F49520
                        * THIS SUBROUTINE FILLS THE TEST AREA WITH THE    * 89F49530
                        * WORST CASE PATTERN.                            * 89F49540
                        *                                                * 89F49550
                        * CALL -                                         * 89F49560
                        *                                                * 89F49570
                        *     BSI  L3 TC010-BASE                         * 89F49580
                        *                                                * 89F49590
                        *     XR1 SHOULD BE UNSPECIFIED.                 * 89F49600
                        *                                                * 89F49610
                        *     XR2 IS NOT USED.                           * 89F49620
                        *                                                * 89F49630
                        *     XR3 IS THE PSEUDO BASE REGISTER.           * 89F49640
                        *                                                * 89F49650
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                        *     AT EXIT THE END ADDRESS IS IN THE          * 89F49660
                        *     ACCUMULATOR.                               * 89F49670
                        *                                                * 89F49680
                        *                                  5/23/69   *   89F49690
                        *                                                * 89F49700
                        ************************************************** 89F49710
                        *                                                * 89F49720
0C63 0 0000             TC010 DC      *-*         ENTRY.                   89F49730
0C64 0 4700 092C              BSI   L3 SA100-BASE  SET ADDRESS LIMITS.     89F49740
0C66 0 D016                   STO     TCC02       SAVE END ADDRESS.        89F49750
0C67 0                  TC020 EQU     *                                    89F49760
0C67 0 6916                   STX   1 TCC04       SET WORST CASE PATTERN   89F49770
0C68 0 C015                   LD      TCC04       OF 64 WORDS OF ONES AND  89F49780
0C69 0 1806                   SRA     SIX         64 WORDS OF ZEROS.       89F49790
0C6A 0 D013                   STO     TCC04                                89F49800
0C6B 0 1802                   SRA     TWO                                  89F49810
0C6C 0 F011                   EOR     TCC04                                89F49820
0C6D 0 4804                   SKP     E                                    89F49830
0C6E 0 7002                   B       TC030                                89F49840
0C6F 0 C00F                   LD      TCC06       STORE /FFFF IN THIS WORD. 89F49850
0C70 0 7001                   B       TC040                                89F49860
0C71 0                  TC030 EQU     *                                    89F49870
0C71 0 1810                   SRA     16          STORE /0000 IN THIS WORD. 89F49880
0C72 0                  TC040 EQU     *                                    89F49890
0C72 0 D100                   STO   1 ZERO        PUT PATTERN IN STORAGE.  89F49900
0C73 0 690A                   STX   1 TCC04       TEST FOR END ADDRESS.    89F49910
0C74 0 C009                   LD      TCC04                                89F49920
0C75 0 F007                   EOR     TCC02                                89F49930
0C76 0 4818                   SKP     +-          SKIP NOT DONE.           89F49940
0C77 0 7002                   B       TC050       BRANCH IF DONE.          89F49950
0C78 0 7101                   MDX   1 ONE         INCREMENT ADDRESS        89F49960
0C79 0 70ED                   B       TC020       REGISTER AND LOOP.       89F49970
0C7A 0                  TC050 EQU     *                                    89F49980
0C7A 0 C002                   LD      TCC02       END ADDRESS IN ACCUMULATOR 89F49990
0C7B 0 4F80 0BFE              B     I3 TC010-BASE  RETURN.                  89F50000
                        ************************************************** 89F50010
                        *                                                * 89F50020
                        * CONSTANTS AND WORK AREAS                       * 89F50030
                        *                                                * 89F50040
                        ************************************************** 89F50050
                        *                                                * 89F50060
0C7D   0001             TCC02 BSS     1           END ADDRESS.             89F50070
0C7E   0001             TCC04 BSS     1           WORK AREA.               89F50080
0C7F 0 FFFF             TCC06 DC      /FFFF       ONES FOR WORST CASE PATRN. 89F50090
                        *                                                * 89F50100
                        ************************************************** 89F50110
                        *                                                * 89F50120
                        * MESSAGES                                       * 89F50130
                        *                                                * 89F50140
                        ************************************************** 89F50150
                        *                                                * 89F50160
0C80 0 000A             MSG01 DC      10          HEADING.                 89F50170
0C81 0 0A0A                   DC      /0A0A       00                       89F50180
0C82 0 0A0A                   DC      /0A0A       00                       89F50190
0C83 0 0000                   DC      /0000                                89F50200
0C84 0 0A08                   DC      /0A08       08                       89F50210
0C85 0 0936                   DC      /0936       9F                       89F50220
0C86 0 0033                   DC      /0033        C                       89F50230
0C87 0 2629                   DC      /2629       OR                       89F50240
0C88 0 3500                   DC      /3500       E                        89F50250
0C89 0 1335                   DC      /1335       TE                       89F50260
0C8A 0 1213                   DC      /1213       ST                       89F50270
0C8B 0 0007             MSG02 DC      7           MESSAGE                  89F50280
0C8C 0 0A0A                   DC      /0A0A       00                       89F50290
0C8D 0 0A01                   DC      /0A01       01                       89F50300
0C8E 0 0000                   DC      /0000                                89F50310
0C8F 0 1235                   DC      /1235       SE                       89F50320
0C90 0 1300                   DC      /1300       T                        89F50330
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0C91 0 3435              DC    /3435   DE                    89F50340
0C92 0 1200              DC    /1200   S                     89F50350
0C93 0 0006       MSG03  DC    6       MESSAGE               89F50360
0C94 0 0A0A              DC    /0A0A   00                    89F50370
0C95 0 010A              DC    /010A   10                    89F50380
0C96 0 0000              DC    /0000                         89F50390
0C97 0 3435              DC    /3435   DE                    89F50400
0C98 0 1200              DC    /1200   S                     89F50410
0C99 0 0800              DC    /0800   8                     89F50420
0C9A 0 0007       MSG04  DC    7       MESSAGE.              89F50430
0C9B 0 0A0A              DC    /0A0A   00                    89F50440
0C9C 0 0102              DC    /0102   12                    89F50450
0C9D 0 0000              DC    /0000                         89F50460
0C9E 0 2625              DC    /2625   ON                    89F50470
0C9F 0 3500              DC    /3500   E                     89F50480
0CA0 0 3212              DC    /3212   BS                    89F50490
0CA1 0 2400              DC    /2400   M                     89F50500
0CA2 0 0007       MSG06  DC    7       MESSAGE.              89F50510
0CA3 0 0A0A              DC    /0A0A   00                    89F50520
0CA4 0 0101              DC    /0101   11                    89F50530
0CA5 0 0000              DC    /0000                         89F50540
0CA6 0 3435              DC    /3435   DE                    89F50550
0CA7 0 1200              DC    /1200   S                     89F50560
0CA8 0 0420              DC    /0420   4-                    89F50570
0CA9 0 073B              DC    /073B   7.                    89F50580
0CAA 0 0025       MSG07  DC    37      MESSAGE               89F50590
0CAB 0 3326              DC    /3326   CO                    89F50600
0CAC 0 3435              DC    /3435   DE                    89F50610
0CAD 0 0000              DC    /0000                         89F50620
0CAE 0 0000              DC    /0000                         89F50630
0CAF 0 0000              DC    /0000                         89F50640
0CB0 0 0000              DC    /0000                         89F50650
0CB1 0 3134              DC    /3134   AD                    89F50660
0CB2 0 3429              DC    /3429   DR                    89F50670
0CB3 0 3512              DC    /3512   ES                    89F50680
0CB4 0 1200              DC    /1200   S                     89F50690
0CB5 0 0000              DC    /0000                         89F50700
0CB6 0 0000              DC    /0000                         89F50710
0CB7 0 0000              DC    /0000                         89F50720
0CB8 0 0000              DC    /0000                         89F50730
0CB9 0 0000              DC    /0000                         89F50740
0CBA 0 0000              DC    /0000                         89F50750
0CBB 0 0013              DC    /0013   T                     89F50760
0CBC 0 3512              DC    /3512   ES                    89F50770
0CBD 0 1300              DC    /1300   T                     89F50780
0CBE 0 2731              DC    /2731   PA                    89F50790
0CBF 0 1313              DC    /1313   TT                    89F50800
0CC0 0 3529              DC    /3529   ER                    89F50810
0CC1 0 2500              DC    /2500   N                     89F50820
0CC2 0 0000              DC    /0000                         89F50830
0CC3 0 1227              DC    /1227   SP                    89F50840
0CC4 0 0000              DC    /0000                         89F50850
0CC5 0 0000              DC    /0000                         89F50860
0CC6 0 0000              DC    /0000                         89F50870
0CC7 0 3631              DC    /3631   FA                    89F50880
0CC8 0 3923              DC    /3923   IL                    89F50890
0CC9 0 3B00              DC    /3B00   .                     89F50900
0CCA 0 2731              DC    /2731   PA                    89F50910
0CCB 0 1313              DC    /1313   TT                    89F50920
0CCC 0 3529              DC    /3529   ER                    89F50930
0CCD 0 2500              DC    /2500   N                     89F50940
0CCE 0 0000              DC    /0000                         89F50950
0CCF 0 1227              DC    /1227   SP                    89F50960
0CD0 0 0009       MSG08  DC    9       MESSAGE               89F50970
0CD1 0 0106              DC    /0106   16                    89F50980
0CD2 0 0308              DC    /0308   38                    89F50990
0CD3 0 0000              DC    /0000                         89F51000
0CD4 0 3631              DC    /3631   FA                    89F51010
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0CD5 0 2312              DC    /2312   LS                    89F51020
0CD6 0 3500              DC    /3500   E                     89F51030
0CD7 0 3925              DC    /3925   IN                    89F51040
0CD8 0 1329              DC    /1329   TR                    89F51050
0CD9 0 2713              DC    /2713   PT                    89F51060
0CDA 0 000A       MSG09  DC    10      MESSAGE.              89F51070
0CDB 0 0106              DC    /0106   16                    89F51080
0CDC 0 0307              DC    /0307   37                    89F51090
0CDD 0 0000              DC    /0000                         89F51100
0CDE 0 3631              DC    /3631   FA                    89F51110
0CDF 0 2312              DC    /2312   LS                    89F51120
0CE0 0 3500              DC    /3500   E                     89F51130
0CE1 0 3331              DC    /3331   CA                    89F51140
0CE2 0 2900              DC    /2900   R                     89F51150
0CE3 0 3338              DC    /3338   CH                    89F51160
0CE4 0 223B              DC    /223B   K.                    89F51170
0CE5 0 0007       MSG10  DC    7       MESSAGE.              89F51180
0CE6 0 0A0A              DC    /0A0A   00                    89F51190
0CE7 0 0104              DC    /0104   14                    89F51200
0CE8 0 0000              DC    /0000                         89F51210
0CE9 0 3435              DC    /3435   DE                    89F51220
0CEA 0 1200              DC    /1200   S                     89F51230
0CEB 0 0A20              DC    /0A20   0-                    89F51240
0CEC 0 033B              DC    /033B   3.                    89F51250
0CED 0 000E       MSG11  DC    14      MESSAGE.              89F51260
0CEE 0 0A01              DC    /0A01   01                    89F51270
0CEF 0 0A01              DC    /0A01   01                    89F51280
0CF0 0 0000              DC    /0000                         89F51290
0CF1 0 1335              DC    /1335   TE                    89F51300
0CF2 0 1213              DC    /1213   ST                    89F51310
0CF3 0 0027              DC    /0027    P                    89F51320
0CF4 0 3113              DC    /3113   AT                    89F51330
0CF5 0 1335              DC    /1335   TE                    89F51340
0CF6 0 2925              DC    /2925   RN                    89F51350
0CF7 0 2034              DC    /2034   -D                    89F51360
0CF8 0 3512              DC    /3512   ES                    89F51370
0CF9 0 000A              DC    /000A    0                    89F51380
0CFA 0 2001              DC    /2001   -1                    89F51390
0CFB 0 053B              DC    /053B   5.                    89F51400
0CFC 0 0011       MSG12  DC    17      MESSAGE, LINE TWO.    89F51410
0CFD 0 0000              DC    /0000                         89F51420
0CFE 0 0000              DC    /0000                         89F51430
0CFF 0 0000              DC    /0000                         89F51440
0D00 0 1213              DC    /1213   ST                    89F51450
0D01 0 2629              DC    /2629   OR                    89F51460
0D02 0 3B00              DC    /3B00   .                     89F51470
0D03 0 2729              DC    /2729   PR                    89F51480
0D04 0 2613              DC    /2613   OT                    89F51490
0D05 0 3B00              DC    /3B00   .                     89F51500
0D06 0 3239              DC    /3239   BI                    89F51510
0D07 0 1320              DC    /1320   T-                    89F51520
0D08 0 1235              DC    /1235   SE                    89F51530
0D09 0 2512              DC    /2512   NS                    89F51540
0D0A 0 3500              DC    /3500   E                     89F51550
0D0B 0 1216              DC    /1216   SW                    89F51560
0D0C 0 3B00              DC    /3B00   .                     89F51570
0D0D 0 0A3B              DC    /0A3B   0.                    89F51580
0D0E 0 0011       MSG13  DC    17      MESSAGE.              89F51590
0D0F 0 0A01              DC    /0A01   01                    89F51600
0D10 0 0A02              DC    /0A02   02                    89F51610
0D11 0 0000              DC    /0000                         89F51620
0D12 0 3525              DC    /3525   EN                    89F51630
0D13 0 1335              DC    /1335   TE                    89F51640
0D14 0 2900              DC    /2900   R                     89F51650
0D15 0 1213              DC    /1213   ST                    89F51660
0D16 0 3129              DC    /3129   AR                    89F51670
0D17 0 1300              DC    /1300   T                     89F51680
0D18 0 3134              DC    /3134   AD                    89F51690
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0D19 0 3429              DC      /3429     DR                    89F51700
0D1A 0 3B20              DC      /3B20     .-                    89F51710
0D1B 0 3435              DC      /3435     DE                    89F51720
0D1C 0 1200              DC      /1200     S                     89F51730
0D1D 0 0A20              DC      /0A20     0-                    89F51740
0D1E 0 0105              DC      /0105     15                    89F51750
0D1F 0 3B00              DC      /3B00     .                     89F51760
0D20 0 0010      MSG14   DC      16        MESSAGE.              89F51770
0D21 0 0A01              DC      /0A01     01                    89F51780
0D22 0 0A03              DC      /0A03     03                    89F51790
0D23 0 0000              DC      /0000                           89F51800
0D24 0 3525              DC      /3525     EN                    89F51810
0D25 0 1335              DC      /1335     TE                    89F51820
0D26 0 2900              DC      /2900     R                     89F51830
0D27 0 3525              DC      /3525     EN                    89F51840
0D28 0 3400              DC      /3400     D                     89F51850
0D29 0 3134              DC      /3134     AD                    89F51860
0D2A 0 3429              DC      /3429     DR                    89F51870
0D2B 0 3B20              DC      /3B20     .-                    89F51880
0D2C 0 3435              DC      /3435     DE                    89F51890
0D2D 0 1200              DC      /1200     S                     89F51900
0D2E 0 0A20              DC      /0A20     0-                    89F51910
0D2F 0 0105              DC      /0105     15                    89F51920
0D30 0 3B00              DC      /3B00     .                     89F51930
0D31 0 000C      MSG15   DC      12        MESSAGE.              89F51940
0D32 0 0A01              DC      /0A01     01                    89F51950
0D33 0 0A04              DC      /0A04     04                    89F51960
0D34 0 0000              DC      /0000                           89F51970
0D35 0 2935              DC      /2935     RE                    89F51980
0D36 0 1213              DC      /1213     ST                    89F51990
0D37 0 2629              DC      /2629     OR                    89F52000
0D38 0 3500              DC      /3500     E                     89F52010
0D39 0 3435              DC      /3435     DE                    89F52020
0D3A 0 1200              DC      /1200     S                     89F52030
0D3B 0 0A20              DC      /0A20     0-                    89F52040
0D3C 0 0105              DC      /0105     15                    89F52050
0D3D 0 3B00              DC      /3B00     .                     89F52060
0D3E 0 0008      MSG16   DC      8         MESSAGE.              89F52070
0D3F 0 0A01              DC      /0A01     01                    89F52080
0D40 0 0105              DC      /0105     15                    89F52090
0D41 0 0000              DC      /0000                           89F52100
0D42 0 3435              DC      /3435     DE                    89F52110
0D43 0 1200              DC      /1200     S                     89F52120
0D44 0 3529              DC      /3529     ER                    89F52130
0D45 0 2926              DC      /2926     RO                    89F52140
0D46 0 293B              DC      /293B     R.                    89F52150
0D47 0 0007      MSG17   DC      7         MESSAGE               89F52160
0D48 0 0106              DC      /0106     16                    89F52170
0D49 0 0309              DC      /0309     39                    89F52180
0D4A 0 0000              DC      /0000                           89F52190
0D4B 0 3114              DC      /3114     AU                    89F52200
0D4C 0 1700              DC      /1700     X                     89F52210
0D4D 0 3529              DC      /3529     ER                    89F52220
0D4E 0 293B              DC      /293B     R.                    89F52230
*****************************************************           89F52240
*                                                   *           89F52250
* SUMMARY STORAGE AREA                              *           89F52260
*                                                   *           89F52270
*****************************************************           89F52280
*                                                   *           89F52290
* THE SUMMARY STORAGE AREA HAS THE LOCATIONS        *           89F52300
* RESERVED FOR ALL THE ERROR COUNTERS FOR THE       *           89F52310
* PATTERN TESTS.                                    *           89F52320
*                                                   *           89F52330
* ANY CHANGE IN THIS STORAGE AREA SHOULD BE         *           89F52340
* REFLECTED IN PXK04 OR STRANGE THINGS WILL         *           89F52350
* HAPPEN.                                           *           89F52360
*                                                   *           89F52370
```



```
*****************************************************           89F52380
*                                                   *           89F52390
*                                                   *           89F52400
0D4F 0 0054      PXK04   DC      84        NUMBER OF WORDS OF STORAGE 89F52410
*                                          NEEDED FOR EACH TEST.  89F52420
0D50 0 0CEB      PXK06   DC      PXK20-2-BASE  BASE ADDRESS OF SUMMARY 89F52430
*                                          STORAGE TABLE.         89F52440
*                                          STORAGE AREA FOR PATTERN 89F52450
*                                          BIT FAILURE STORAGE.   89F52460
0D52   0001      PXK20   BSS   E 1         DROP BIT 0.            89F52470
0D53   0001              BSS     1         PICK BIT 0.            89F52480
0D54   001E              BSS     30        DROP, PICK REST OF BITS. 89F52490
0D72   0001              BSS     1         DROP STORAGE PROTECT BIT. 89F52500
0D73   0001              BSS     1         PICK STORAGE PROTECT BIT. 89F52510
0D74   0001              BSS     1         DROP PARITY BIT.       89F52520
0D75   0001              BSS     1         PICK PARITY BIT.       89F52530
0D76   0024              BSS     36        BSM 2.                 89F52540
0D9A   0024              BSS     36        BSM 3.                 89F52550
0DBE   0024              BSS     36        BSM 4.                 89F52560
0DE2   0024              BSS     36        BSM 5.                 89F52570
0E06   0024              BSS     36        BSM 6.                 89F52580
0E2A   0024              BSS     36        BSM 7.                 89F52590
0E4E   0024              BSS     36        BSM 8.                 89F52600
0E72 0           PXK30   EQU     *         ADDR. LINE FAIL. STORAGE. 89F52610
0E72   0008              BSS     8         HI X.                  89F52620
0E7A   0008              BSS     8         LO X.                  89F52630
0E82   0008              BSS     8         HI Y.                  89F52640
0E8A   0010              BSS     16        LO Y.                  89F52650
0E9A   0028              BSS     40        BSM 2.                 89F52660
0EC2   0028              BSS     40        BSM 3.                 89F52670
0EEA   0028              BSS     40        BSM 4.                 89F52680
0F12   0028              BSS     40        BSM 5.                 89F52690
0F3A   0028              BSS     40        BSM 6.                 89F52700
0F62   0028              BSS     40        BSM 7.                 89F52710
0F8A   0028              BSS     40        BSM 8.                 89F52720
0FB2 0           PXK40   EQU     *         SENSE/INHIBIT FAIL. STOR. 89F52730
0FB2   0001              BSS     1         LO 4K.                 89F52740
0FB3   0001              BSS     1         HI 4K.                 89F52750
0FB4   0002              BSS     2         BSM 2.                 89F52760
0FB6   0002              BSS     2         BSM 3.                 89F52770
0FB8   0002              BSS     2         BSM 4.                 89F52780
0FBA   0002              BSS     2         BSM 5.                 89F52790
0FBC   0002              BSS     2         BSM 6.                 89F52800
0FBE   0002              BSS     2         BSM 7.                 89F52810
0FC0   0002              BSS     2         BSM 8.                 89F52820
0FC2 0           PXK50   EQU     *         TEST FAILURES STORAGE. 89F52830
0FC2   0018              BSS     24                               89F52840
0FDA 0           PXK60   EQU     *         TEST LOOPS.            89F52850
0FDA   0018              BSS     24                               89F52860
0FF2   0000              END     AA000
  NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

```
AAC02  0059  0011 0037 0041 0048 004D 004E
AAC04  005A  000B 000D 0012 002F 0036 00C3 0443 0836
AAC06  005C  00E5
AAC10  005E  0024 002E 0043 0051 00B9 00EF 0874 08DC 092F 0984
AAC20  005F  0068
AAC22  0060  006A
AAC24  0061  006D
AAC26  0062  0070
AAC50  0092  001F 0025 0032 0081 009C 00B2 00EB 00F9 0109 0119 051B 05CC 0650
             0657 065E 0665 066C 0673 0691 069D 086D 08D5 0928 0942 0975
AAC52  0094  0083 027F
AAC56  0095  0084
AAC58  0096  0089
AAC60  0097  0072
AAC62  0098  0075
AAC64  0099  0074 06A8
AAC66  009A  0077 058F 06B6
AA000  0000  0735 0736 0816 086A 0FF2
AA001  0004  000A
AA020  0015  0061 0458
AA022  001F  002D 003E 0058
AA030  002E  0023
AA034  003F  0039
AA036  004E  004A
AA038  0051  0035
AA040  0054  0031
AA050  0063  000C 0078 007B
AA080  007A  007C 0816 086A
AA085  007F  007E
AA100  0081  0028 0045 07FC
ABC90  00AB  00A7
ABC92  00AC  00A0 00A1 00A4
AB010  009B  00A9 00D5 0283
AB015  00A0  009E
AB020  00A9  009F
ACC05  00CD  00B3
ACC10  00CE  00B5 00BC 00BE 00C6 00C9
ACC15  00CF  00BD
ACC20  00D0  00C2 00C7
ACC22  00D1  00D8
ACC24  00D2  00D9 00FE 010E
ACC26  00D3  00DA 00FB
AC010  00B1  00CB 0165 02A5
AC020  00BF  00B8 00BB
AC040  00C9  00C5
AC050  00CA  00C8
BASE   0065  000E 0013 0015 0018 001A 001B 001D 0029 002B 003A 003C 004F 0052
             0054 0056 0061 0062 0064 0078 007C 0085 0087 008A 008C 008E 0097
             0098 009C 00A2 00A5 00A7 00A9 00B2 00B9 00C3 00CB 00D5 00D6 00DB
             00DE 00E0 00E1 00E3 00E5 00E9 00EB 00ED 00EF 00F2 00F5 00F7 00F9
             0102 0105 0107 0109 0112 0115 0117 0119 0121 0123 012E 0134 0136
             013C 013E 0143 0145 0149 0151 015D 015E 015F 0160 0161 0162 0163
             0164 0165 016D 0170 0172 0173 0175 0178 017A 017B 0181 0195 026A
             026C 026E 026F 0270 0272 0273 0278 027A 027B 027D 027F 0280 0283
             0285 0289 028B 028E 0291 02A5 02AD 02AF 02B0 02B1 02B3 02B5 02B6
             02B7 02B8 02B9 02BA 02BB 02BC 02BD 02C0 02C1 02C2 02C3 02C4 02C5
             02C6 02C7 02C8 02CA 02CB 02CD 02CE 02DD 02F3 0304 0360 036C 036E
             038A 0399 03AE 03B5 03BB 03C4 03D6 03DB 03DF 03E8 040B 0422 0426
             042D 042F 0432 0434 0436 0438 043A 043C 043E 0440 0443 044C 044F
             0451 0452 0456 0458 0477 0489 048F 0491 04A6 04AA 04B1 04B3 04B8
             04BA 04C5 04C9 04CB 04DA 04F5 04F9 04FC 0502 0517 051B 0524 052A
             052B 052C 052D 052E 052F 0530 0531 0532 0533 0534 053C 0549 054B
             054C 054D 054E 054F 0550 0551 0552 0553 055D 0560 0575 0578 0581
             058D 058F 0594 05B2 05B7 05BA 05C1 05CC 05D1 05D4 05E1 05E3 05ED
             05EF 05F4 05F7 05FD 0602 0604 0638 063C 063E 0643 064A 064C 064E
             0650 0654 0656 0657 065B 065E 0662 0664 0665 0669 066C 0670 0672
             0673 0677 067B 068A 068C 068F 0691 0697 069B 069D 06A1 06A3 06A8
             06AC 06AF 06B6 06BA 06D0 06D5 06F1 071B 071E 072D 0731 0733 0738
```



```
             0740 075F 0777 07AC 07B5 07C9 07CB 07FC 080F 081E 0829 0831 0836
             084D 086D 0874 0899 089E 08A4 08A9 08C0 08C6 08CA 08CC 08CD 08D5
             08DC 08EC 08F1 08FC 0901 090C 0911 0915 091B 0920 0923 0928 092F
             0942 0946 0948 094E 0950 095F 0961 0967 0970 0972 0975 0982 0984
             0997 09A0 09A3 09A6 09A8 09A9 09AC 09AE 09AF 09B2 09BF 09CB 09CF
             09D1 09D3 09DA 09E1 09E3 09E4 09E7 0A5C 0A61 0A62 0A7B 0A7E 0A81
             0A83 0A84 0A87 0A89 0A8A 0A8C 0A8D 0A90 0A94 0ACD 0ACF 0AD7 0AE8
             0AEA 0AED 0AF1 0AF3 0AF6 0AF9 0AFB 0AFC 0B03 0B06 0B0E 0B14 0B18
             0B1E 0B60 0B63 0B65 0B66 0B6F 0B77 0B7A 0B7C 0B7E 0B7F 0B84 0B86
             0B87 0BA7 0BAA 0BAC 0BAD 0BB0 0BB2 0BB3 0BB6 0BC0 0BCF 0BD4 0BD7
             0BD9 0BDC 0BDE 0BE0 0BEE 0BF0 0BF2 0BF3 0C21 0C24 0C51 0C54 0C56
             0C57 0C5C 0C5E 0C5F 0C64 0C7B 0D50
BBC02  0154  00EC 017E 0193
BBC06  0155  0126 0130 0147 014B 018D
BBC08  0156  00FA 00FF 010B 0128 0137 014C
BBC10  0157  010A 010F 0125 0138 0189 0273
BBC14  0158  0187 0188 018C 019C 019D 019F
BBC18  0159  0185 0192
BBC20  015A  019B
BBC22  015B  019E
BBC24  015C  011A
BBC26  015D  0150
BBC28  015E  0166
BBC30  015F  015E
BB010  00D4  0085
BB020  00EB  00E7
BB030  00F2  0173
BB040  0102  017B
BB060  0112  00F1
BB070  0119
BB080  0121  026E 0272
BB090  0128  0120
BB100  012E  0136 0142
BB110  0131  0129 013B
BB120  0134  012D
BB130  0137  0162
BB134  0143  027A
BB140  0149  011D
BB146  014E  014D 0164
BB147  0150  0127 0133 0148
BB150  0165  018B 018F
BB160  0168  0167
BB170  016B  016A
BB180  016D  00FD 0101
BB190  0175  010D 0111
BB200  017D  01A1
BB205  0183  0180
BB210  0191  0153
BB220  019B  0198
BB230  019D  026A
BB300  026C  015F
BB400  0270  0160
BB500  0273  0161
BB600  027C  0163 026F 0277 027B
CCC01  02B4  0290 029F 02E9 02F1 031D 0322
CCC02  02B5  0297
CCC04  02B6  02B5
CCC06  02BE  0294 029E 02A0
CCC08  02BF  0293
CCC10  02C0  0284
CCC12  02C1  02A6
CCC14  02C2  02C1
CC010  0282  0087
CC020  0284  02AF 02B3 02C7 02CA 02CD
CC040  0295  02A2
CC050  0299  0298
CC060  029C  029B
CC070  029E  02BD 038A 0399 03AE 03C4 03E8 040B 0422
```

CC120	02A8	02A7
CC130	02AB	02AA
CC140	02AD	02C2
CC150	02B1	02C5
CC300	02C8	02C3
CC400	02CB	02C4
CC520	0424	02B0 02C6 02CE
CDC01	033C	02E0 02E3
CDC03	033D	02E4
CDC04	033E	02D3 02DC 02FB 0303 0315 036B
CDC06	033F	02D0 02D8 02E8 02EA 02F0 02F2
CDC07	0340	02FC 0302
CDC08	0342	02D9 03DF
CDC10	0343	02D1 02D4 03DB
CDC11	0344	02D2 02D6 02D7 02DB 0328 0338
CDC12	0346	02E7
CDC14	0348	02EF
CDC16	034A	02EB 0367
CDC18	034C	0309 0321 0323 0356 035E
CDC20	034D	0357 035B
CDC22	034E	030B
CDC24	034F	030C 031C 0320
CDC26	0350	0306 0308 0312
CDC28	0351	0330 0395 03A6
CDC30	0352	02F7
CDC32	0353	02FE
CDC34	0354	02F9
CDC36	0355	0300
CD001	02CF	0295 02DD 030E 03BB
CD010	02DF	0287 02A3 02F3 0360
CD030	02E8	02EE
CD040	02F3	02E2
CD042	02FE	02F6
CD043	0304	02FD
CD045	030A	035F
CD050	030D	0325
CD060	0315	0311 033B
CD064	0316	02F8 02FF 030A 030F 0324 0326 033A
CD066	0318	02FA 0301
CD070	031A	0314 0372
CD080	0326	031B
CD090	0356	031F
CD100	0360	035A
CD110	0364	0363
CD120	0366	0319
CD130	0369	0368
CD140	0370	0366
CEC02	03C8	0381 0386 0387 0396 03A8 03A9 03AA 03E1 03E2 03F1 0404 0408 0412 041B 041F
CEC04	03CA	028B 028E 0373 0376 038C 039B 03BE 040D 05F7
CEC06	03CB	0377 03AB 03D0 03EA 05FD
CEC08	03CC	0291 037B 038F 03B0 03D2 03EF 0411
CEC09	03CD	0362 0374 0379 038D 03A3 03E4 0405 041C
CEC10	03CE	03D1 03D6 03E3 03E5
CEC12	03CF	03F0
CE010	0373	02B6
CE020	037E	037D
CE030	0382	0375 0389
CE040	0384	037A
CE110	038C	02B7
CE120	0391	0390
CE130	0393	038E 0398
CE210	039B	02B8
CE220	039D	039C
CE230	03A0	03AD
CE3C1	03C6	03B7
CE3C2	03C7	03B9
CE310	03B0	02B9

CE320	03B2	03B1
CE330	03B9	03B5
CE340	03BB	03C3
CE350	03BD	03BA
CE360	03C0	03BF
CE410	03D0	02BA
CE420	03D4	03D3
CE430	03D6	03E7
CE440	03DE	03D9
CE450	03E2	03DD
CE510	03EA	02BB
CE520	03EC	03EB
CE530	03F2	040A
CE540	040B	0407
CE610	040D	02BC
CE620	040F	040E
CE630	0413	0421
CE640	0422	041E
EIGHT	0008	0026 0033 0071 042A 04A4 04A5 0500 0522 07B9 0976 0A30 0AC7 0ADE 0B88
ETEST	0424	0736
EXCHA	0010	097E 0996 099B 099F
FIVE	0005	006E 03DA 04E0 053E 0943 0AC2 0ADD
FOUR	0004	0020 006B 00B4 00C0 030D 032F 0331 03C7 0615 0617 06FE 07A2 07A9 08F9 09EA 0A29 0BF9
HZK01	045A	0429 0445 0448 044A 0473 09BF 0A94 0B6F 0BC0
HZK02	045B	0428 0449 0474 047C 0487 04AD
HZK03	0003	047E
HZK04	045C	0475
HZK08	045D	0425
HZK80	045E	0451
HZK90	0468	0434
HZK92	0471	042B
HZX90	0493	0491
HZX92	0494	048B 048C 048E
HZ100	0424	008A 0280 0492 04DA
HZ110	042A	044B
HZ140	043E	0437
HZ145	0443	042E
HZ150	044C	0447
HZ200	0472	042C 0435 0477 047B 047D 0486 0488 0489
HZ210	047F	047A 0484
HZ220	0486	0482
HZ230	0489	0485
HZ500	048B	08C6 091B 0948
ICC02	04A8	049E 04A0 04A3
IC010	049C	00A2 048D 04A6 04B5 04C7 05D4 0697 0BCF
IGC02	04C2	04B6 04B7
IG010	04A9	0530 0551
IG020	04AF	04AE
IHC06	04D0	04CB
IHC08	04D1	04C8
IHC10	04DA	04CC
IH010	04C4	052E
IH020	04C5	054F
IH030	04CC	04C0
IIC02	0526	04DC 04F4 055F 05C1 0604
IIC04	0528	04E4 04EC 04FB 050A
IIC06	052A	04E1
IIC08	052B	052A
IIC14	0531	0506
IIC16	0532	0508
IIC26	0533	04FE
IIC32	0534	0520
IIC34	0535	04BA 04E5 0596
II010	04DB	0062 04AC 04CE 04F5 0534 064A 071E
II020	04E7	04E3
II030	04EA	04E9

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II040  04EC  04CF
II050  04EF  04DD
II060  04F1  04DE 072D
II070  04F3  04DF
II200  04F7  04BE 0524 052F
II220  0508  0505
II230  050D  0509
II235  050F  0532
II240  0510  0531 0552
II250  0510  000E
II255  0512  0516
II260  0513  0553
II295  051B  0581
IXC02  054B  053F
IXC04  054C  054B
IXC06  0552  057B
IXC08  0553  0583
IXC10  0554  053B 0593 0602
IXC12  0555  00ED 036C 05C0 0638 06AC
IXC14  0556  00E9 0195 027D 056A 05CB 06AF
IXC18  0557  0570 05A3
IXC20  0558  0573 05A6
IXC22  055A  0542 0562 0566 059A 059E 05A9
IXC24  05E6  05D6 05E0
IXC25  05E7  05DF
IXC26  05E8  058C
IXC28  05EA  05AB 05AC 060E 061E
IXC30  0302  05D7
IXC32  05EB  04FC 05A8 05AA 05DC
IXC34  05EC  04F9 0517 05B0 05D9
IXC38  05ED  05B9
IXC40  05EE  05C4
IXC42  05EF  0648
IXC44  05F0  0616
IXC46  05F1  05F4 0627 062B 062D 0631
IXC48  05F2  0628 0633 0637
IXC50  05F3  062E 0634
IXC52  05F4  0606
IXXXX  065D  052C 054D 0669
IXX20  0665  0661
IX010  053A  0533 0549 057D 0585 064C
IX020  0544  0541
IX030  0547  0546
IX100  055C  0578 0580 063C
IX120  056F  056C
IX130  0572  0569
IX140  0574  0571
IX200  057A  0550 05B2 063E
IX300  0583  057F
IX305  058C  0601
IX310  0591  0590
IX320  05A2  0599
IX330  05A5  05A1
IX340  05A7  05A4
IX600  05B4  0577 05B1 05E3
IX610  05B5  0588 05BC 05D3 0731
IX650  05CC  05BE 05C6
IX660  05E3  05D0
IX700  05F5  058B
IX705  0602  05FB
IX710  060C  0626
IX720  0621  060C 0620
IX730  0623  0608
IX740  062D  062A
IX750  0633  0630
IX760  0638  062C 0632
IX780  063A  05F5 05F6 05FC 060A
IX800  0642  052D 054E 064E 065B
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IX810  0650  0646
IX820  0657  0653
IY010  066B  052B 054C 0677
IY020  0673  066F
JAC02  06A3  068E
JAC04  06A4  0699 069A
JAC06  06A6  0684 06B4
JA010  0679  0181 036E 06A1
JA040  0688  067A 0682 0696
JA050  069D  0694
JB010  06A7  055D 067D 06BA
JB020  06AA  06A9
JB030  06B6  06B2
JB040  06B8  06B7
KAC02  06D2  06BD 06C3
KAC04  06D3  06C0 06E2 06EA
KAC06  06D4  06C9 06FB 0706 0708
KAC08  06D5  06DB
KAC10  06D6  06E4
KAC12  06D7  06CE
KAC14  06D8  06CC
KA010  06BC  0560 0594 067F 06AE 06D0
KA050  06C6  06BE
KA070  06CE  06CB
KA080  06CF  06CD
KB010  06D9  04B1 05D1 0695 06F1
KB020  06DE  06DD
KB040  06ED  06E0 06E6
KB050  06EF  06DA
KCC02  06F3  06C1 06E3 0714 0718
KCC04  06F4  06C2 06E5 06EB 06FC
KCC06  06F5  06FD 0709 070D
KCC08  06F6  0700 0707
KCC10  06F7  0702
KCC12  06F8  070A 0715
KC010  06F9  06C5 06E8 06EC 071B
KC020  06FC  071A
KC030  06FE  0713
KC040  0714  070C
KC050  071B  0717
KLC02  0735  0727
KLC04  0736  072A
KL010  071D  04B3 04C5 0502 0733
KL020  0730  0725 0729 072B
MAC01  0766  0643 074B 075B
MAC05  0768  0743
MAC10  076A  073D 0744 0748 0762
MAC15  076C  073A 0742 074C 0752 0753 077F
MAC20  076E  0754 0787 0793 0797
MAC25  0770  075D 0794 07A5
MAC30  0772  07A1 07B1
MAC35  0774  077E 078D 07B3
MAC40  0776  0777 078C 07B2
MAC45  0777  077D
MAC50  0778  074F
MA001  0737  00F2 00F5 0102 0105 0112 0115 016D 0170 0175 0178 0738 073B
MA010  073F  0015 0018 001B 0029 003A 0054 008C 00A5 00DB 00DE 00E1 042F 0432
             0440 044C 044F 0452 048F 04C9 0654 0662 0670 073C 0740 075C 075E
             075F 094E 09A3 09A6 09A9 09AC 09AF 09D1 09DA 0A7E 0A81 0A84 0A87
             0A8A 0A8D 0ACD 0AD7 0AE8 0AED 0AF9 0AFC 0B60 0B63 0B66 0B7C 0B7F
             0BA7 0BAA 0BAD 0BB0 0BB3 0BDE 0C51 0C54 0C57 0C5C
MA015  0740  0763 0765
MA018  0745  073E
MA020  0748  05EF
MA025  0751  074E
MA030  0754  0750 0757
MA036  075C  079F
MA040  0761  0759
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MA050   0764  074A
MA100   077A  0747
MA105   0784  0783
MA110   078B  0792 0799
MA130   079A  0781 0796
MA140   079B  077B
MA145   079D  077A
MA150   07A0  078A 078E 07A4 07AC 07B4
MA155   07A5  07AF
MA180   07AE  07A8 07AB
MA200   07B0  079A 07B5
MMC05   07CB  07C2
MMC10   07CC  07BC
MM010   07B7  078B 07C9
MM030   07C4  07C3
MM050   07C7  07B8 07C1
MSG01   0C80  001A
MSG02   0C8B  001D
MSG03   0C93  002B
MSG04   0C9A  003C
MSG06   0CA2  0056
MSG07   0CAA  0C56
MSG08   0CD0  0672
MSG09   0CDA  0656
MSG10   0CE5  008E
MSG11   0CED  00E0
MSG12   0CFC  00E3
MSG13   0D0E  00F7
MSG14   0D20  0107
MSG15   0D31  0117
MSG16   0D3E  0172 017A
MSG17   0D47  0664
NAC02   0811  07EC 0823 0835
NAC04   0812  07EE 081A 0825 083C
NAC06   0813  07EF 07F2 07F5 07F7 081B 081D 0826 0828 083D 083F
NAC08   0814  07F1 0804 0819
NAC10   0815  07FE 0805
NAC12   0816  07F8
NAC14   F012  0801
NA010   07EC  004F 0052
NA020   07F7  07F4
NA030   07FA  07F9
NA100   07FD  07F6 080F 081C 0827 083E
NA110   0807  0806 080C
NA120   0809  07FF
NA130   080D  0800
NB010   0817  081E 0830 084A
NC010   0820  0829 083A 0848
ND010   082B  0831 0856
ND015   0831  083B 0840
ND020   0833  082F
ND030   083C  0839
NEC02   086A  084B
NEC04   086B  0854 0867
NE010   0841  026C 02AD 084D 0853 0855 085A 085E 0862 0866 0868
NE020   084A  0844 085B 0865 0869
NE030   084B  0849 0857
NE040   0850  084C
NE050   0852  084F
NE100   0853  0847
NE110   0856  085F
NE200   0858  0134 013C 02B1 0859
NE300   085C  0270 02C8 085D
NE400   0860  0278 02CB 0861
NINE    0009  00C1
ONE     0001  003F 0042 0046 004B 006C 006F 0073 0076 00BF 00CA 00D4 011E 012A
              013F 0190 032A 032C 032E 0332 0334 0336 0378 037C 03A0 03A2 0479
              04BC 04CD 04E2 04FF 051D 0521 0540 057C 0584 0589 05AD 05DB 0607
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              0610 0612 0614 0618 061A 061C 0649 0658 0666 0674 069E 06C8 06DC
              06E9 06FF 0712 0719 0722 0751 077C 0782 0788 0798 07C0 07F0 0803
              0818 0821 082C 0833 0845 0871 0879 087C 087F 08B7 08BA 08D9 08E2
              0904 0906 092C 0934 0969 0979 0988 09BD 09C5 09D8 0A16 0A1B 0A39
              0A71 0A78 0A9A 0AB0 0AB5 0B6B 0B72 0BBC 0BC5 0C18 0C78
PQC02   08C8  0875 0897 089B 08A1 08A6 08AF
PQC04   08C9  0876
PQC06   08CA  0878
PQC08   08CB  087A 0896 0898 0899 089E 08A0 08A2 08A4 08A9 08AB 08AD
PQC10   08CC  087B
PQC12   08CD  087E
PQC14   08CE  08AC
PQC16   08CF  0887 08AE 08B2
PQC18   08D0  0886
PQC20   08D1  088B 0890
PQC22   08D2  088C 0891
PQ010   086C  0575 068A 08C0
PQ020   0874  0870
PQ030   0876  0873
PQ050   0886  08BB
PQ060   0888  0880 08B8
PQ070   088D  087D
PQ080   08A4  0895
PQ090   08AB  0893
PQ100   08AE  08A3
PQ110   08BA  08B1
PQ120   08BC  0881 08B9
PQ130   08BE  0882 08C2
PQ140   08C2  089D 08A8
PQ150   08C4  08C3
PRC04   091D  08E3 08EA 08F3 08F5 08FA 0907 090C 0911 0917 0919
PRC06   091E  08DD 08EE 08FE 090E 0918 0930 0939
PRC08   091F  08DF
PRC10   0920  08E1
PRC12   0921  08EB 08EC 08F1 08FB 08FC 0901
PRC14   0922  08F4
PRC16   0923  0905
PRC18   0924  08DE 0903 0926 0933 093E
PR010   08D3  05B7 068C 0915
PR014   08DC  08D8
PR016   08DE  08DB
PR020   08E8  08F7
PR030   090C  091A
PR040   0913  08D4 08E6 0908
PR050   0917  090B
PR060   091B  08F0 0900 0910
PSC06   0952  0931
PSC08   0953  094C
PSC10   0954  0950
PSC12   0955  094A 094B 094D
PSC14   095F  093F
PS010   0925  0151 0285 05BA 068F 0946
PS014   092F  092B
PS016   0931  092E
PS020   0937  0935
PS030   093C  0936
PS040   0946  0941 0951
PS050   0948  093B
PS060   094A  0945
PTEST   009B  0735
PT010   0960  0013 0456 0972
PT020   0965  0964
PT030   096C  096A 096F
PXK04   0D4F  0961
PXK06   0D50  0967
PXK20   0D52  08CA 09E7 0D50
PXK30   0E72  0920 0B14
PXK40   0FB2  0923 0B87
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PXK50   0FC2   0436 05ED 06A3 0BF3
PXK60   0FDA   015D 02C0 042D 095F 0BF2
SAC02   098A   097A
SAC04   098B   097B
SAC06   098C   097C 097F 0987
SAC08   098D   0985
SAC10   098E   097D
SAC14   098F   0988
SAC16   0990   0981
SA010   0974   0289 0304 0982 0992 099A
SA020   097E   0989
SA040   0984   0978
SA100   0991   00D6 0123 0145 0997 0C64
SA110   0994   0993
SA200   0999   09A0
SA210   099D   099C
SBC02   09E3   09B7
SBC04   09E4   09BC
SBC06   09E5   09C1
SBC08   09E6   09C2
SBC10   09E7   09C4
SBC12   09E8   09C6 09CB 09D5 09D7
SBC14   09E9   09D6
SBC16   09EA   09CE
SBC70   09EB   09A8
SBC80   09F2   09AE
SBC92   0A0F   09E4
SB010   09A2   0438 09E1
SB020   09BA   09B9
SB030   09C7   09BE 09D9
SB050   09DD   09B4
SB060   09DF   09B5
SCC02   0A5E   0A10 0A1D
SCC03   0A5F   0A3D
SCC04   0A60   0A22 0A27 0A2A 0A2F
SCC08   0A61   0A15
SCC10   0A62   0A1A
SCC12   0A63   0A40 0A42
SCC90   0A65   0A61 0A6E 0AF3
SCC91   0A66   0A70 0AF6
SCC92   0A68   0A44
SCC93   0A69   0A62 0A75
SCC94   0A6A   0A77
SC010   0A0F   09CD 0A5C 0AF1 0B77 0BD9
SC020   0A18   0A17
SC030   0A20   0A3F
SC040   0A22   0A36
SC050   0A39   0A46 0A55
SC060   0A3B   0A1C
SC070   0A40   0A1F
SC080   0A47   0A24
SC090   0A4A   0A2C
SC100   0A4D   0A49
SC110   0A52   0A50
SC115   0A54   0A51
SC120   0A56   0A11 0A3A
SC130   0A58   0A12
SC140   0A5A   0A13
SD010   0A6C   09CF 0A7B 0B7A 0BDC
SD020   0A74   0A6D
SEC02   0B12   0A96 0A9C 0AAD 0AE0 0B0D 0B71
SEC04   0B13   0A97
SEC06   0B14   0A99
SEC08   0B15   0A9B 0ABE 0AC0 0AC3 0AC5 0AC8 0ACA 0AD3 0AD5 0ADF 0AE1 0B06
SEC10   0B16   0A9F 0AA3 0AA6 0AA7 0AAA 0AAE 0AF0 0B0B
SEC12   0B17   0AAC
SEC14   0B18   0AAF
SEC16   0B19   0ABF 0AC4 0AC9
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SEC18   0B1A   0AD4
SEC20   0B1B   0ADB
SEC22   0B1C   0AE4
SEC24   0B1D   0B10
SEC26   0B1E   0AB4
SEC40   0B20   0AFB
SEC46   0B29   0AF5 0AF8
SEC54   0B2C
SEC56   0B3C   0B1E
SEC70   0B3C   0A83
SEC80   0B47   0A89
SEC90   0B53   0A8C
SEVEN   0007   011B 086E 08D6 0929
SE010   0A7D   043A 0B03
SE020   0AA1   0A9D 0AA9
SE030   0AA8   0AA5
SE040   0AB2   0AB1
SE050   0AB9   0AB6 0AD6
SE060   0AD3   0AD1
SE070   0AD7   0AD2
SE075   0ADF   0AEC
SE080   0AE2   0AB7
SE090   0AFF   0A92
SE092   0B01   0A93
SE200   0B05   0ABC 0AC1 0AC6 0ACB 0AE6 0B0E
SE210   0B0E   0B11
SE220   0B10   0B09
SIC02   0B86   0B6A
SIC04   0B87   0B73
SIC08   0B88   0B79
SIC80   0B89   0B65
SIC90   0B95   0B7E 0B86
SIX     0006   02E5 0745 07A6 0C69
SI010   0B5F   043C 0B84
SI020   0B6D   0B6C
SI030   0B75   0B74
SI040   0B82   0B69
SLC02   0BF0   0BBB
SLC04   0003   0BBA
SLC06   0BF1   0BCD
SLC08   0BF2   0BC7
SLC10   0BF3   0BCA
SLC12   0BF4   0BC2 0BE2 0BE5
SLC14   0BF5   0BC3
SLC16   0BF6   0BC8 0BD4 0BE1 0BE3
SLC18   0BF7   0BC6 0BC9 0BCB 0BD7 0BE4 0BE6
SLC20   0BF8   0BCC 0BCE
SLC22   0BF9   0BDB
SLC24   0BFA   0BD1
SLC70   0BFB   0BAC
SLC80   0C08   0BB2
SL010   0BA6   043E 0BEE
SL020   0BBE   0BBD
SL030   0BCC   0BE9
SL050   0BEA   0BB8
SL060   0BEC   0BB9
SUC02   0025   0C16
SUC04   0C24   0C17
SUC80   0C25   0426 09D3 0ACF 0AEA 0BE0 0C24 0C5B 0C5E
SUC82   0C26   0B18 0C4C
SUC84   0C27   09E3 0BF0
SUC86   0C29   06D5
SUC88   0C34   0097 058D 08CC
SUC90   0C40   0098 08CD
SU010   0C14   04AA 053C 067B 09B2 0A90 0BB6 0C21
SU020   0C1B   0C19 0C1E
SU050   0C1F   0C15
SVC02   0C61   0970 0C4D 0C50
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SVC04   0C62  0C5A
SV010   0C4B  04B8 05E1 069B 0C5F
SV020   0C5A  0C4F
TCC02   0C7D  0C66 0C75 0C7A
TCC04   0C7E  0C67 0C68 0C6A 0C6C 0C73 0C74
TCC06   0C7F  0C6F
TC010   0C63  0121 012E 0143 0149 0C7B
TC020   0C67  0C79
TC030   0C71  0C6E
TC040   0C72  0C70
TC050   0C7A  0C77
TEN     000A  0ACC 0AE7
THREE   0003  005F 00B6 012B 0140 0275 032B 032D 0333 0335 03A5 03B4 03C6 0609
              0611 0613 0619 061B 082D 08E5 08E9 0963 0ABD 0ADC 0BD3
TWO     0002  0282 02EC 0329 0337 0567 0597 059F 05CE 05DE 060F 061D 0651 065F
              066D 0692 0755 080B 0842 0863 09CA 0A20 0A73 0A7A 0AD0 0AEB 0C6B
T1053   07CD  07CB
WATF1   04BF  30F1
WATF2   0536  04EE 050C 0537 0564 0587 059C 30F2
WATF3   0538  051A 0539 30F3
WATF4   0640  0636 0641 30F4
WAT0A   0057  0090 300A
WAT0B   008F  300B
WAT0C   00A8  300C
WAT02   001E  3002
WAT04   002C  3004
WAT06   003D  3006
WAT20   00E4  3020
WAT21   00F8  3021
WAT22   0108  3022
WAT23   0118  3023
WAT30   0761  3030
WAT31   0764  3031
WAT32   07AE  3032
WAT50   0455  3050
WAT72   051F  3072
WAT74   0647  3074
WAT75   065A  3075
WAT76   0676  3076
WAT77   0668  3077
WAT78   06A0  3078
ZERO    0000  0007 0067 0069 017D 0183 0186 0191 0194 0199 01A2 01A3 01A4 01A5
              01A6 01A7 01A8 01A9 01AA 01AB 01AC 01AD 01AE 01AF 01B0 01B1 01B2
              01B3 01B4 01B5 01B6 01B7 01B8 01B9 01BA 01BB 01BC 01BD 01BE 01BF
              01C0 01C1 01C2 01C3 01C4 01C5 01C6 01C7 01C8 01C9 01CA 01CB 01CC
              01CD 01CE 01CF 01D0 01D1 01D2 01D3 01D4 01D5 01D6 01D7 01D8 01D9
              01DA 01DB 01DC 01DD 01DE 01DF 01E0 01E1 01E2 01E3 01E4 01E5 01E6
              01E7 01E8 01E9 01EA 01EB 01EC 01ED 01EE 01EF 01F0 01F1 01F2 01F3
              01F4 01F5 01F6 01F7 01F8 01F9 01FA 01FB 01FC 01FD 01FE 01FF 0200
              0201 0202 0203 0204 0205 0206 0207 0208 0209 020A 020B 020C 020D
              020E 020F 0210 0211 0212 0213 0214 0215 0216 0217 0218 0219 021A
              021B 021C 021D 021E 021F 0220 0221 0222 0223 0224 0225 0226 0227
              0228 0229 022A 022B 022C 022D 022E 022F 0230 0231 0232 0233 0234
              0235 0236 0237 0238 0239 023A 023B 023C 023D 023E 023F 0240 0241
              0242 0243 0244 0245 0246 0247 0248 0249 024A 024B 024C 024D 024E
              024F 0250 0251 0252 0253 0254 0255 0256 0257 0258 0259 025A 025B
              025C 025D 025E 025F 0260 0261 0262 0263 0264 0265 0266 0267 0268
              0269 03A1 03A4 03F2 03F6 03FF 04E6 050F 0512 0515 0543 0565 056D
              056F 0572 0574 059D 05A2 05A5 05A7 05C7 05CA 067E 0681 0683 0685
              0686 06B3 06B5 06CF 0703 0704 0705 070E 0786 078F 07BA 07BB 07C6
              088A 088F 08B3 09C9 0A28 0A31 0A32 0A38 0A41 0A48 0A4B 0A4C 0A52
              0A54 0A6F 0A74 0A76 0ABB 0AE5 0BD2 0C72
ZERO0   0000
END OF ASSEMBLY
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1. PURPOSE

THE PURPOSE OF THE AUX DIAGNOSTIC LOADER IS TO LOAD ITSELF AND PROVIDE A PERMANENT LOADING PROGRAM FOR THE VARIOUS AUX PROGRAMS.

2. PREREQUISITES

THE AUX DIAGNOSTIC LOADER MUST BE LOADED BY MEANS OF A 1442 CARD READ/PUNCH.

NOTE

IF THE 1442 USES A CUSTOMER-ASSIGNED AREA CODE, A NEW FOUR-CARD OBJECT DECK MUST BE CREATED. THE PROCEDURE FOR CREATING A NEW OBJECT DECK IS PRESENTED IN THE DOCUMENTATION OF THE AUX PROG. GENERATOR UTILITY PROGRAM. THE LOCATIONS IN THE LOADER PROGRAM THAT MUST BE ALTERED ARE SPECIFIED BY A STATEMENT AT THE BEGINNING OF THE PROGRAM'S LISTING.

3. USE PROCEDURE

****CAUTION****
SHOULD THE READER BE ON A CHANNEL SHARED WITH ANOTHER DEVICE, NO AUX PROGRAMS MAY BE LOADED WHILE THE OTHER DEVICE IS OPERATING.

3.1 CLEARING AUXILIARY STORAGE

CLEAR THE AUXILIARY STORAGE OF THE 1801 OR 1802 PROCESSOR-CONTROLLER AS FOLLOWS,

A. PRESS STOP AND RESET KEY OF THE 1800 P-C CONSOLE.
B. SET ROTARY MODE SW OF 1800 P-C CONSOLE TO RUN.
C. SET WRITE STG PRO BITS TOGGLE SWITCH OF 1800 P-C CONSOLE TO YES.
D. SET ALL REMAINING TOGGLE SWITCHES OF 1800 P-C CONSOLE TO THEIR OFF POSITIONS (DOWN).
E. SET FORCE AUX SWITCH OF CE PANEL ON.
F. PRESS CLEAR STG KEY OF 1800 P-C CONSOLE AND WHILE HOLDING IT DEPRESSED, PRESS START KEY. AFTER THE CLEAR OPERATION, THE INSTRUCTION AND ADDRESS REGISTERS SHOULD CONTAIN 00FF (HEX) AND 00FF (HEX) RESPECTIVELY. THE AUX STORAGE LIGHT WILL BE ON TO INDICATE THAT WE ARE IN AUX STORAGE.

G. PRESS STOP KEY AND THEN RESET KEY OF THE 1800 P-C CONSOLE.
H. SET WRITE STG PRO BITS TOGGLE SWITCH OF 1800 P-C CONSOLE TO NO.

3.2 PROGRAM LOADING

LOAD THE AUX DIAGNOSTIC LOADER AS FOLLOWS,

A. DEPRESS NPRO KEY OF 1442 TO EJECT ANY CARDS LEFT IN THE MACHINE.
B. PLACE THE FOUR CARDS OF THE AUX DIAGNOSTIC LOADER IN THE HOPPER OF THE 1442 THEN ADD A BLANK CARD. ENSURE THAT THE CARDS ARE PLACED FACE DOWN WITH THE NINE EDGE FORWARD AND IN THE CORRECT ORDER AS SHOWN BELOW,

   THE FIRST TWO CARDS CONTAIN THE BOOTSTRAP-ROUTINE AND ARE NOT IDENTIFIED. THE THIRD CARD CONTAIN AN 11 PUNCH IN COLUMN 80, AND THE FOURTH CARD CONTAIN A 0 PUNCH IN COLUMN 80. CARDS THREE AND FOUR CONTAIN THE ACTUAL AUX DIAGNOSTIC LOADER ROUTINE.

C. PRESS 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
D. LOAD CARDS IN INITIAL-PROGRAM-LOAD (IPL) MODE BY DEPRESSING PROG LOAD PUSHBUTTON OF 1800 P-C CONSOLE.

   CHECK POINT

   THE AUX DIAGNOSTIC LOADER WILL STOP AT A WAIT (8 REG 3000) INSTRUCTION IF THE LOADER HAS BEEN STORED CORRECTLY. IF THE LOADER DOES NOT ENCOUNTER A WAIT INSTRUCTION, THE LOADER HAS NOT BEEN STORED PROPERLY. TRY AGAIN.

E. SET FORCE AUX SWITCH OF CE PANEL TO OFF.
F. YOU MAY NOW LOAD THE DESIRED AUX PROGRAM BY FOLLOWING THE STEPS BELOW-

   1. GET THE CUSTOMER'S PROGRAM RUNNING,
      A. ASSURE THAT CUSTOMER'S PROGRAM IS READY TO RESUME IT'S SEQUENTIAL EXECUTION.
      B. IF NO CUSTOMER PROGRAM IS IN CORE THEN PLACE A ONE INSTRUCTION LOOP IN MAIN CORE AND RUN ON IT. A 70FF MAY BE USED.
   2. AN AUX PROGRAM MAY NOW BE LOADED. REFER TO THE LOADING PROCEDURE FOR THE DESIRED PROGRAM AND PROCEED.

NOTE

IF IT SHOULD BECOME DESIRABLE UPON INITIAL INSTALLATION OF THE SYSTEM TO RUN THE AUX PROGRAMS IN MAIN CORE THE FOLLOWING PROCEDUPE MUST BE FOLLOWED,

A. ASSUME CONTROL OF THE ENTIRE 1800 DATA ACQUISITION AND CONTROL SYSTEM.
B. SET FORCE AUX SWITCH (ON CE PANEL) TO OFF.
C. LOAD THE AUX DIAGNOSTIC LOADER IN IPL MODE.
D. ENTER A ONE-INSTRUCTION LOOP (70FF) AT LOCATION 1000, AND RUN ON IT.
E. SET THE INTERRUPT SWITCH (ON CE PANEL) TO THE INTERRUPT TO MAIN STORAGE POSITION.
F. LOAD THE DESIRED AUX PROGRAM.

4. PRINTOUTS

THE AUX DIAGNOSTIC LOADER DOES NOT PRODUCE PRINTOUTS. INSTEAD, THE LOADER EMPLOYS SEVERAL LOOPING ROUTINES TO INDICATE OPERATING CONDITIONS TO THE OPERATOR. IF ONE OF THESE LOOPING ROUTINES IS ENCOUNTERED WHILE OPERATING THE LOADER, THE ADDRESS INDICATED BY THE ADDRESS REGISTER SHOULD BE USED IN CONJUNCTION WITH THE PROGRAM LISTING TO DETERMINE WHY THE LOOP WAS ENTERED. A PROGRAMMED WAIT IS USED TO INDICATE THAT THE LOADER HAS BEEN PROPERLY LOADED INTO AUXILIARY STORAGE AND IS AVAILABLE FOR USE.

5. COMMENTS

5.1 BOOTSTRAP LOADER ROUTINE

ASSUMING THAT THE AUXILIARY STORAGE OF THE 1801 OR 1802 PROCESSOR-CONTROLLER IS CLEAR, THE CARDS OF THE AUX DIAGNOSTIC LOADER ARE IN THE HOPPER OF THE 1442 READY TO BE READ, AND THE FORCE AUX SWITCH OF THE CE PANEL IS SET TO ON, DEPRESSING THE PROG LOAD PUSHBUTTON OF THE 1800 P-C CONSOLE STARTS THE BOOTSTRAP-LOADER ROUTINE, CAUSING THE FIRST CARD TO BE READ. PARAGRAPH 5.1.1 DESCRIBES THE ROUTINE PRODUCED BY READING THE FIRST CARD.

5.1.1 FIRST-CARD ROUTINE

THE FIRST-CARD ROUTINE BEGINS BY SENSING THE DEVICE STATUS WORD (DSW) OF THE 1442 AND DETERMINING WHETHER OR NOT THE 1442 IS READY. IF THE 1442 IS NOT READY, THE PROGRAM REMAINS IN A LOOPING ROUTINE UNTIL THE PROGRAM OPERATOR MANUALLY INTERVENES. IF THE 1442 IS READY, THE PROGRAM ISSUES A COMMAND TO READ THE SECOND CARD. WHILE THE SECOND CARD IS BEING READ, THE DSW OF THE 1442 IS CONTINUOUSLY SENSED TO DETERMINE IF THE 1442 IS READY. WHEN THE 1442 BECOMES READY, THE SECOND-CARD ROUTINE IS STARTED.

5.1.2 SECOND-CARD ROUTINE

THE SECOND-CARD ROUTINE BEGINS BY ISSUING A COMMAND TO READ THE 1 ST OF TWO CARDS (THIRD CARD) CONTAINING THE AUX DIAGNOSTIC LOADER ROUTINE. AFTER THE CARD-READ COMMAND IS GENERATED, THE PROGRAM ENTERS AND REMAINS IN A LOOPING ROUTINE UNTIL THE 1442 BECOMES READY. WHEN THE 1442 IS READY, A SUM-CHECKING ROUTINE IS BEGUN.

5.1.3 CHECK-SUM ROUTINE

THE CHECK-SUM ROUTINE ADDS UP THE WORDS OF THE CARD READ IN PARAGRAPH 5.1.2. IF THE SUM IS NOT CORRECT, THE PROGRAM ENTERS AND REMAINS IN A LOOPING ROUTINE UNTIL THE PROGRAM OPERATOR MANUALLY INTERVENES. IF NO ERROR IS DETECTED, THE FOURTH CARD IS READ, AND THE PROGRAM ENTERS AND REMAINS IN A LOOPING ROUTINE UNTIL THE 1442 BECOMES READY. WHEN THE 1442 IS READY, THE CHECK-SUM ROUTINE IS REPEATED. IF A SUMMATION ERROR DOES NOT OCCUR, THE PROGRAM IS ALLOWED TO PROCEED.

5.1.4 TERMINATING BOOTSTRAP LOADER ROUTINE

AFTER THE TWO CARDS CONTAINING THE AUX DIAGNOSTIC LOADER ROUTINE (CARDS 3 AND 4) ARE READ INTO AUXILIARY STORAGE, AND THE PROGRAM STOPS AT A WAIT INSTRUCTION. THIS WAIT INSTRUCTION INDICATES THAT THE AUX DIAGNOSTIC LOADER IS PROPERLY ENTERED INTO AUXILIARY STORAGE AND IS AVAILABLE FOR USE. THE PROGRAM OPERATOR MAY NOW RETURN CONTROL TO THE CUSTOMER'S MAIN-LINE PROGRAM BY SETTING THE FORCE AUX SWITCH TO OFF.

5.2 AUX DIAGNOSTIC LOADER ROUTINE

A PROGRAM MUST BE IN MAIN-CORE STORAGE AND MUST BE RUNNING OR READY TO START BEFORE AN AUX PROGRAM CAN BE LOADED. WITH THE AUX DIAGNOSTIC LOADER PRESENT IN AUXILIARY STORAGE AND SEVEN CARDS OF AN AUX PROGRAM IN THE HOPPER OF THE 1442 READY TO BE LOADED, DEPRESSING THE CE LEVEL INTERRUPT PUSHBUTTON CAUSES THE LOADER ROUTINE TO START LOADING THE PROGRAM. AFTER LOADING, THE A AND Q REGISTERS, INDEX REGISTER NO. 1, AND STATUS ARE STORED AND THE ROUTINE DETERMINES WHETHER THE 1442 IS READY. IF THE 1442 IS NOT READY, THE A AND Q REGISTERS, INDEX REGISTER NO. 1, AND STATUS ARE RESTORED AND CONTROL IS RETURNED TO THE CUSTOMER.S MAIN-LINE PROGRAM. IF THE 1442 IS READY, THE ROUTINE TURNS ON THE CE MODE AND READS A CARD. UPON READING AN AUX PROGRAM CARD, THE A AND Q REGISTERS, INDEX REGISTER NO. 1, AND STATUS ARE RESTORED, AND CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM. THE INTERRUPT FROM THE 1442 RETURNS CONTROL TO THE AUX DIAGNOSTIC AND THE REMAINING CARDS OF THE AUX PROGRAM ARE LOADED IN ABOVE MANNER.

5.2.1 CHECK-SUM ROUTINE

WHEN THE 1442 INTERRUPT IS SERVICED, THE A AND Q REGISTERS, INDEX REGISTER NO. 1, AND STATUS ARE STORED, AND THE CHECK-SUM ROUTINE IS BEGUN. IF THE SUM IS NOT CORRECT, THE CARD-READ CONTROL IS INITIALIZED, THE CE MODE IS TURNED OFF, THE A AND Q REGISTERS, INDEX REGISTER NO. 1, AND STATUS ARE RESTORED, AND CONTROL IS RETURNED TO CUSTOMER'S MAIN-LINE PROGRAM. A CARD-READING ROUTINE IS STARTED IF THERE IS NO CHECK-SUM ERROR.

5.2.2 CARD-READING ROUTINE

IF THERE IS NO CHECK-SUM ERROR, THE ROUTINE DETERMINES WHETHER THE LAST CARD HAS BEEN READ. IF NOT, THE NEXT AUX PROGRAM CARD IS READ AND CHECKED IN THE SAME MANNER AS THE FIRST. THIS CARD-READING ROUTINE CONTINUES UNTIL ALL SEVEN CARDS OF THE AUX PROGRAM HAVE BEEN READ. THEN, THE ROUTINE MODIFIES AN EXIT VECTOR TO ALLOW ENTRY INTO THE DIAGNOSTIC PROGRAM, INITIALIZES THE CARD-READ CONTROL, TURNS OFF THE CE MODE, AND BRANCHES TO THE AUX PROGRAM.

5.2.3 ENTERING AUX PROGRAM

ENTRY INTO THE AUX PROGRAM IS ACHIEVED BY RESTORING THE EXIT VECTOR (PARAGRAPH 5.2.2) OF THE LOADER ROUTINE AND ESTABLISHING A NEW ENTRY POINT (LABELED RETUR) INTO THE AUX PROGRAM. WHEN THE DIAGNOSTIC PROGRAM'S TERMINATOR ROUTINE IS SELECTED, THE LOADER ROUTINE'S EXIT VECTOR TO THE AUX PROGRAMIS REPLACED BY A SENSE-DSW INSTRUCTION TO ALLOW ANOTHER PROGRAM TO BE LOADED. CONTROL IS THEN RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM.

6. APPENDIX (NONE)

```
                        ABS                                                 8A100000
0000                    ORG     /000                                        8A100010
                    *                                                       8A100020
                    ***************************************************     8A100030
1000                AREA  EQU     /1000       1ST 1442 AREA CODE            8A100040
                    *       IF THIS PROG IS TO BE USED FOR A MACHINE        8A100050
                    * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH         8A100060
                    * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST      8A100070
                    * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A        8A100080
                    * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG        8A100090
                    * GENERATOR WRITE-UP FOR PROCEDURE. (SPECIAL)          8A100100
                    ***************************************************     8A100110
                    *                                                       8A100120
                    *                                                       8A100130
                    *             AUX LOADER PROGRAM                        8A100140
                    *             ******************                        8A100150
                    *                                                       8A100160
                    *                                                       8A100170
                    * 1ST CARD                                              8A100180
                    *     THIS CARD IS ENTERED IN IPL MODE                  8A100190
                    *                                                       8A100200
                    *                                                       8A100210
                    *                                                       8A100220
                    *                                                       8A100230
0000 0 0808             XIO     DSW00       SENSE READER                    8A100240
0001 0 4C04 0009        BSC  L  NOTRY,E     BR NOT READY                    8A100250
0003 0 0806             XIO     RDINN       READ CARD                       8A100260
0004 0 0807     SELF    XIO     DSW00       SENSE READER                    8A100270
0005 0 4C04 0004        BSC  L  SELF,E      BR READER NOT READY             8A100280
0007 0 4C00 0057        BSC  L  FIRSQ       BR TO SECOND BOOT CARD          8A100290
0009 0 70FF     NOTRY   MDX     NOTRY       READER NOT READY LOOP           8A100300
000A   0000             BSS  E  0                                           8A100310
000A 0 0050     RDINN   DC      /0050       AUX LOADER LOADER ADDR          8A100320
000B 0 1601             DC      /0601+AREA  READ CARD IOCC                  8A100330
000C 0 0000     DSW00   DC      0                                           8A100340
000D 0 1703             DC      /0703+AREA  SENSE READER IOCC               8A100350
                    ***************************************************     8A100360
                    *                                                       8A100370
                    * 2ND CARD                                              8A100380
                    *     THIS CARD READS THE ACTUAL AUX LOADER             8A100390
                    * PROGRAM. THE DATA ENTERED IS CHECKED TO ASSURE        8A100400
                    * THAT BOTH CARDS ARE ENTERED CORRECTLY AND IN          8A100410
                    * THE PROPER ORDER.                                     8A100420
                    *                                                       8A100430
                    *                                                       8A100440
000E                    ORG     /050                                        8A100450
0050   0000             BSS  E  0                                           8A100460
0050 0 0000     DSWX    DC      0                                           8A100470
0051 0 1703             DC      /0703+AREA                                  8A100480
0052 0 1802     CEOFX   DC      /1802       COUNTER AND ID                  8A100490
0053 0 1000             DC      /0000+AREA  CE OFF IOCC                     8A100500
0054 0 0000     RDIX    DC      /0000       INITIAL READ IN ADDRESS         8A100510
0055 0 1601             DC      /0601+AREA                                  8A100520
0056 0 0180     CEOX    DC      /0180       READ IN ADDR CONST              8A100530
                    ***************************************************     8A100540
                    *                                                       8A100550
                    *                                                       8A100560
0057 0 08FC     FIRSQ   XIO     RDIX        READ CARD                       8A100570
0058 0 08F7     SELFA   XIO     DSWX        SENSE READER                    8A100580
0059 0 4C04 0058        BSC  L  SELFA,E     BR READER NOT READY             8A100590
                    *                                                       8A100600
                    *               PERFORM DATA CHECK                      8A100610
005B 0 6126     CAM     LDX   1 38                                          8A100620
005C 0 C0F7             LD      RDIX                                        8A100630
005D 0 D004             STO     CHECZ+1                                     8A100640
005E 0 C0F3             LD      CEOFX                                       8A100650
005F 0 1802             SRA     2                                           8A100660
0060 0 D0F1             STO     CEOFX                                       8A100670
```



```
0061 0 8500 0000    CHECZ A     L1 0                                        8A100680
0063 0 71FF             MDX     1 -1                                        8A100690
0064 0 70FC             MDX     CHECZ                                       8A100700
0065 0 4820             BSC     Z           SKIP CARD IN CORE OK            8A100710
0066 0 70FF         A   MDX     A           FAILED TO LOAD AUX LOADER       8A100720
0067 0 741B 0054        MDX  L  RDIX,27                                     8A100730
0069 0 C0E8             LD      CEOFX                                       8A100740
006A 0 F0E8             EOR     CEOX                                        8A100750
006B 0 4C20 006F        BSC  L  KK,Z        BR READ MORE CARDS              8A100760
006D 0 3000         FINIS WAIT              AUX LOADER IN CORE OK           8A100770
006E 0 70FE             MDX     FINIS                                       8A100780
                    *                                                       8A100790
                    *                                                       8A100800
                    *           READ THE SECOND AUX LOADER CARD             8A100810
006F 0 08E4         KK  XIO     RDIX        READ CARD                       8A100820
0070 0 08DF         QR  XIO     DSWX        SENSE READER                    8A100830
0071 0 1004             SLA     4                                           8A100840
0072 0 4C10 0070        BSC  L  QR,-        BR NOT OP COMPLETE              8A100850
0074 0 70E6             MDX     CAM                                         8A100860
                    ***************************************************     8A100870
                    ***************************************************     8A100880
                    *                                                       8A100890
                    *                                                       8A100900
                    * THE ACTUAL AUX LOADER PROGRAM                         8A100910
                    * ****************************                          8A100920
                    *                                                       8A100930
0075                    ORG     0                                           8A100940
0000 0 7015         DSWO    MDX  X  SECON-FIR-1                             8A100950
                    ***************************************************     8A100960
                    *                                                       8A100970
                    *           PROGRAM ENTRY POINT                         8A100980
                    *                                                       8A100990
0001 0 280B         START   STS     OUT         STORE STATUS                8A101000
0002 0 D811             STD     AQ          SAVE A AND Q                    8A101010
0003 0 690B             STX     1 SAVE1+1   SAVE INDEX REG 1                8A101020
                    *                                                       8A101030
                    *                                                       8A101040
0004 0 0813             XIO     CEON        OR BR TO AUX                    8A101050
0005 0 080C             XIO     DSWOQ-1     SEN READER                      8A101060
0006 0 1802         FIR SRA     2           SRA 2 OR MDX SECON   PM01       8A101070
0007 0 4C04 0034        BSC  L  NICE-1,E    BR READER NOT READY             8A101080
0009 0 C0F6             LD      DSWO                                        8A101090
000A 0 1000         KEEP NOP                THIS INST USED AS AN            8A101100
                    *                       * ADDR FOR INTERRUPT            8A101110
                    *                       * RETURN WHEN AUX IS            8A101120
                    *                       * IN MAIN LINE.                 8A101130
000B 0 D0FA             STO     FIR                          PR01           8A101140
000C 0 080D         OK  XIO     RDIN        READ CARD                       8A101150
                    ***************************************************     8A101160
                    *                                                       8A101170
                    *           EXIT TO MAINLINE PROGRAM                    8A101180
                    *                                                       8A101190
000D 0 2000         OUT LDS                                                 8A101200
000E 0 6500 0000    SAVE1 LDX   L1 0                                        8A101210
0010 0 C803             LDD     AQ                                          8A101220
0011 0 4CC0 000A        BOSC I  /A          BR OUT OF CE INT TO MAINL       8A101230
                    *                                                       8A101240
                    ***************************************************     8A101250
                    *  THE FOLLOWING WORD MUST BE AT AN ODD LOC             8A101260
0013 0 1703         DSWOQ DC    /0703+AREA  SENSE READER IOCC               8A101270
0014   0000             BSS  E  0                                           8A101280
0014 0 0000         AQ  DC      0                                           8A101290
0015 0 0000             DC      0                                           8A101300
0016 0 1802         CEOFF DC    /1802       COUNTER AND ID                  8A101310
0017 0 1000             DC      /0000+AREA  CE OFF IOCC                     8A101320
0018 0 0036         CEON  DC    /0036       READ IN ADDR CONST              8A101330
0019 0 1001             DC      /0001+AREA  CE ON IOCC                      8A101340
001A 0 0036         RDIN  DC    /0036       INITIAL READ IN ADDRESS         8A101350
```

```
0018 0 1601                DC      /0601+AREA                                  8A101360
                           ********************************************************* 8A101370
                           *                                                   8A101380
                           *          PERFORM DATA CHECK                       8A101390
001C 0 6126          SECON LDX   1 38                                          8A101400
001D 0 C0FC                LD      RDIN                                        8A101410
001E 0 D004                STO     CHECK+1                                     8A101420
001F 0 C0F6                LD      CEOFF                                       8A101430
0020 0 1802          GONE  SRA     2                                           8A101440
0021 0 D0F4                STO     CEOFF                                       8A101450
0022 0 8500 001A     CHECK A     L1 RDIN                                       8A101460
0024 0 71FF                MDX   1 -1                                          8A101470
0025 0 70FC                MDX     CHECK                                       8A101480
0026 0 4C20 002F           BSC   L  INIZA,Z     BR CARD IN WRONG               8A101490
0028 0 7418 001A           MDX   L  RDIN,27                                    8A101500
002A 0 C0EB                LD      CEOFF                                       8A101510
0028 0 4C20 000C           BSC   L  OK,Z        BR READ MORE CARDS             8A101520
                           ********************************************************* 8A101530
                           *                                                   8A101540
                           *          ALL CARDS LOADED AND CHECKED             8A101550
002D 0 C0F2                LD      GONE                                        8A101560
002E 0 D006                STO     NICE         PLACE NOP            PK02      8A101570
002F 0 C0F0          INIZA LD      GONE         RESTORE LOADER                  8A101580
0030 0 D0E5                STO     CEOFF                                       8A101590
0031 0 D0D4                STO     FIR          *                    PR01      8A101600
0032 0 C0E5                LD      CEON         *                               8A101610
0033 0 D0E6                STO     RDIN         *                               8A101620
0034 0 08E1                XIO     CEOFF        *                               8A101630
0035 0 70D7          NICE  MDX     OUT          MDX OUT OR NO OP     PM02      8A101640
0036    0036               END     *-1          NOT USED                        8A101650
 NO ERRORS IN ABOVE ASSEMBLY
```


C R O S S R E F E R E N C E

NAME	VALUE	REFERENCES
A	0066	0066
AQ	0014	0002,0010
AREA	1000	0008,000D,0013,0017,0019,001B,0051,0053,0055
CAM	0058	0074
CEOFF	0016	001F,0021,002A,0030,0034
CEOFX	0052	005E,0060,0069
CEON	0018	0004,0032
CEOX	0056	006A
CHECK	0022	001E,0025
CHECZ	0061	005D,0064
DSWO	0000	0009
DSWOO	000C	0000,0004
DSWOQ	0013	0005
DSWX	0050	0058,0070
FINIS	006D	006E
FIR	0006	0000,0008,0031
FIRSQ	0057	0007
GONE	0020	002D,002F
INIZA	002F	0026
KEEP	000A	
KK	006F	0068
NICE	0035	0007,002E
NOTRY	0009	0001,0009
OK	000C	002B
OUT	000D	0001,0035
QR	0070	0072
RDIN	001A	000C,001D,0022,0028,0033
RDINN	000A	0003
RDIX	0054	0057,005C,0067,006F
SAVE1	000E	0003
SECON	001C	0000
SELF	0004	0005
SELFA	0058	0059
START	0001	

END OF ASSEMBLY

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TABLE OF CONTENTS

1. PURPOSE

THE PURPOSE OF THE AUX 1810 PROGRAM IS TO EXERCISE THE 1810 WITH SEEK, WRITE AND READ OPERATION.

2. PREREQUISITES

2.1 DEVICE AREA CODE

IF THE DEVICE TO BE TESTED USES A CUSTOMER ASSIGNED AREA CODE, A NEW AUX PROGRAM DECK OR PAPER TAPE MUST BE CREATED. THE PROCEDURE IS PRESENTED IN THE DOCUMENTATION OF THE AUX PROGRAM GENERATOR UTILITY (PID 08AC - CARD VERSION, PID 08AD - PAPER TAPE VERSION) THE PROGRAM LOCATIONS THAT MUST BE ALTERED ARE SPECIFIED BY A STATEMENT AT THE BEGINNING OF THE PROGRAM LISTING.

2.2 CARD INPUT

--- CAUTION ---

DO NOT ATTEMPT TO LOAD THIS PROGRAM IF THE CARD READER SHARES A CHANNEL WITH ANOTHER DEVICE WHILE THAT DEVICE IS OPERATING.

THE AUX DIAGNUSTIC LOADER (PID 08A1) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PROGRAM DECK CAN BE LOADED.

2.3 PAPER TAPE INPUT

THE AUX DIAGNUSTIC LOADER (PAPER TAPE - PID 08A0) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PAPER TAPE PROGRAM CAN BE LOADED.

3. USE PROCEDURE

--- CAUTION ---

DO NOT RUN THIS PROGRAM IF THE 1810 SHARES A CHANNEL WITH ANOTHER DEVICE WHILE THAT DEVICE IS OPERATING.

BEFORE PROCEEDING, A PROGRAM MUST BE IN MAIN-CORE STORAGE RUNNING OR AT A WAIT INSTRUCTION READY TO START RUNNING.

3.1 CARD INPUT LOADING PROCEDURE

A. BE SURE THE 1442 IS AVAILABLE AND ALL CARDS ARE REMOVED.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT TWO TIMES TO ASSURE THE 1442 IS IN CE MODE.
D. PLACE THE SEVEN CARDS OF THE AUX 1810 EXERCISER PROGRAM IN THE HOPPER OF THE 1442 AND FOLLOW WITH A BLANK CARD.

NOTE

EACH PROGRAM CARD HAS A CHARACTER ENTERED INTO COLUMN 80. THIS CHARACTER DEFINES THE CARD'S POSITION IN THE DECK ACCORDING TO THE FOLLOWING SEQUENCE, X(FIRST), THEN 0, 1, 2, 3, 4, AND 5. THE CARDS CANNOT BE READ UNLESS THEY ARE PLACED IN THE HOPPER IN THE CORRECT ORDER.

E. DEPRESS THE 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
F. SELECT THE DESIRED DEVICE AND ROUTINE FROM TABLE 1.
G. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO LOAD THE PROGRAM. (IF THE HOPPER OF THE 1442 DOES NOT GO EMPTY THE CHECK-SUM ROUTINE IN THE AUX DIAGNOSTIC LOADER MOST LIKELY REJECTED THE PROGRAM. CHECK THE CARDS FOR PROPER SEQUENCE AND RETURN TO STEP A AND TRY AGAIN).
H. GO TO SECTION 3.3

3.2 PAPER TAPE INPUT LOADING PROCEDURE

A. BE SURE THAT THE 1054 TAPE READER IS AVAILABLE AND THAT THERE IS NO TAPE IN THE READER.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT PUSHBUTTON TWO TIMES TO ASSURE THAT THE 1054 IS PLACED IN CE MODE.
D. PLACE THE FIRST TAPE CHARACTER OF THE PROGRAM DIRECTLY ABOVE THE SENSE PINS IN THE 1054 READER. (THE CHECK-SUM ROUTINE OF THE AUX DIAGNOSTIC LOADER WILL REJECT THE PROGRAM IF THE AUX TAPE IS LOADED INCORRECTLY).
E. SELECT THE DESIRED DEVICE AND ROUTINE FROM TABLE 1.
F. DEPRESS CE LEVEL INTERRUPT TO LOAD THE PROGRAM. TAPE ACTION SHOULD START AND CONTINUE UNTIL THE ENTIRE AUX PROGRAM HAS BEEN READ. WHEN THE READER STOPS, THE FIRST TAPE FEED HOLE CHARACTER FOLLOWING THE AUX PROGRAM DATA SHOULD BE LOCATED DIRECTLY ABOVE THE 1054 SENSE PINS FOR A CORRECTLY STORED PROGRAM. IF THE TAPE DID NOT STOP AT SAID LOCATION, RETURN TO STEP A TO RELOAD PROG.

3.3 OPERATING PROCEDURE

THE ROUTINE SELECTED WILL AUTOMATICALLY START AFTER THE PROGRAM HAS BEEN ENTERED INTO AUX STORAGE. SUBSEQUENT ROUTINES MAY BE SELECTED AT ANY TIME USING THE SWITCH SETTINGS LISTED IN TABLE 1.

TABLE 1. CE PROGRAM SWITCH SETTINGS

BIT SWITCHES 10 AND 11 WILL SELECT THE DEVICE BY THE FOLLOWING -

00 OR 01 - 1ST 1810 THIS IS NEEDED ONLY ON 1ST PASS
10 - 2ND 1810
11 - 3RD 1810

ROUTINE	BIT SWITCHES 8 9 10 11 12 13 14 15	FUNCTION
MOVE 1 TRK IN AND OUT	0 0 0 0 0 0 0 0	THIS ROUTINE MOVES ONE TRACK OUT AND THEN ONE TRACK IN.
MOVE OUT	0 0 0 0 0 0 0 1	THIS ROUTINE MOVES THE HEAD TO THE CENTER AND THEN ONE TRACK AT A TIME TO THE EDGE.
MOVE IN	0 0 0 0 0 0 1 0	THIS ROUTINE MOVES ONE TRACK AT A TIME UNTIL IT REACHES THE CENTER AND THEN OUT.
WRITE-READ COMPARE-INDICATE	0 0 0 0 0 0 1 1	THIS ROUTINE WRITES A RECORD AND THEN READS IT. AFTER THAT IT IS COMPARED AND IF OK GOES TO THE CENTER AND BACK.
WRITE-READ COMPARE-NO INDICATION	0 0 0 0 1 0 1 1	THIS ROUTINE WRITES A RECORD AND THEN READS IT. THIS IS REPEATED WITHOUT GOING TO THE CENTER AND BACK AFTER COMPARING.
CE SERVICE STOP	0 0 0 0 1 1 1 1	THIS SWITCH SETTING CAUSES THE PROGRAM TO STOP BUT DOES NOT TERMINATE THE PROGRAM. IT IS RECOMMENDED TO USE THIS SETTING WHEN ADJUSTING THIS DEVICE. TO START THE ROUTINE, SELECT THE CE PROGRAM SWITCH SETTINGS AND DEPRESS CE INTERRUPT BUTTON.
PROGRAM TERMINATOR	1 1 1 1 1 1 1 1	THIS SWITCH SETTING INITIATES A ROUTINE THAT TERMINATES THIS PROGRAM. (ALL AUX PROGRAMS USE THE SAME PROGRAM-TERMINATOR SETTING.) CAUTION FOLLOW THE TERMINATING PROCEDURE IN SECTION 3.5

3.4 CE SERVICE STOP

THIS SWITCH SETTING WILL NOT TERMINATE THE PROGRAM BUT IT WILL CAUSE THE DEVICE TO STOP AND STAY IN CE MODE. IT IS RECOMMENDED TO USE THIS SETTING WHEN ADJUSTING THIS DEVICE. TO START THE ROUTINE, SELECT THE CE PROGRAM SWITCH SETTINGS AND DEPRESS CE INTERRUPT.

3.5 TERMINATING PROCEDURE

A. SET THE CE PROGRAM SWITCHES TO 00001111 -CE SERVICE STOP. (THE ONLY REASON FOR USING THIS SETTING IS TO STOP ANY DEVICE ACTION WHICH MAY CAUSE AN INTERRUPT).
B. SET THE CE PROGRAM SWITCHES TO 11111111 -TERMINATOR SETTING, AND DEPRESS THE CE INTERRUPT LEVEL PUSHBUTTON ONCE AND ONLY ONCE. (A SECOND DEPRESSION OF THE CE INT. PUSHBUTTON WILL RESULT IN THE AUX DIAGNOSTIC LOADER TRYING TO LOAD A NEW PROGRAM IF THE READER IS READY).

NOTE

TO OFFSET THE POSSIBILITY THAT THE INPUT DEVICE MIGHT BE MALFUNCTIONING THE NEXT TIME THE 1800 SYSTEM NEEDS SERVICING THE FOLLOWING PROGRAM SHOULD BE LOADED INTO AUX CORE AT THE CONCLUSION OF EACH SERVICE CALL -

A. CARD INPUT

LOAD THE AUX 1442 PACKED READ EXERCISE PROGRAM (PID 08AA) AFTER ASSURING THE PROGRAM IS BY PUNCHING CARDS, CE SWITCH SETTING 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING, TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

B. TAPE INPUT

LOAD THE AUX 1054/55 EXERCISE PROGRAM (PID 08A8). AFTER ASSURING THE PROGRAM IS IN BY PUNCHING TAPE, CE SWITCH SETTINGS 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

4. PRINTOUTS

THERE ARE NO PRINTOUTS IN THIS EXERCISER. THE ONLY INDICATION THAT WILL BE GIVEN IS IN THE WRITE-READ-COMPARE ROUTINE. AFTER A CORRECT WRITE-READ-COMPARE, THE HEAD WILL MOVE TO THE CENTER AND BACK BEFORE REPEATING THE ROUTINE. IF THE OPERATION WAS INCORRECT NO HEAD MOVEMENT WILL BE GIVEN.

5. COMMENTS

A PROGRAM MUST BE IN MAIN-CORE STORAGE AND MUST BE RUNNING OR READY TO START BEFORE THIS PROGRAM CAN BE LOADED. THE AUX LOADER MUST BE PRESENT IN AUXILIARY STORAGE. THE PROGRAM WILL START AUTOMATICALLY WITH THE ROUTINE SETTING IN THE C E PROGRAM SWITCHES.

5.1 MOVE 1 TRACK OUT AND IN

THIS ROUTINE WILL SEEK HOME AND THEN MOVE ONE TRACK TOWARD THE CENTER AND THEN MOVES ONE TRACK TOWARD THE EDGE. THIS IS CONTINUED UNTIL ANOTHER ROUTINE IS SELECTED OR UNTIL A CE SERVICE STOP IS SENSED.

5.2 MOVE OUT ONE TRACK AT A TIME

THIS ROUTINE WILL SEEK HOME AND THEN AN I/O COMMAND WILL BE GIVEN TO MOVE 202 TRACKS TOWARD THE CENTER. THEN THE HEAD MOVES TOWARD THE EDGE ONE TRACK AT A TIME FOR 202 MOVES. AFTER THAT THE ROUTINE WILL BE REPEATED UNTIL A NEW ROUTINE IS SELECTED OR A C E SERVICE STOP IS SENSED.

5.3 MOVE IN ONE TRACK AT A TIME

THIS ROUTINE WILL SEEK HOME AND THEN MOVE TOWARD THE CENTER. THIS WILL CONTINUE FOR 202 MOVES AND THEN AN I/O COMMAND WILL BE GIVEN TO MOVE 202 TRACKS TOWARD THE EDGE. THIS WILL BE REPEATED UNTIL A NEW ROUTINE IS SELECTED OR A CE SERVICE STOP IS SENSED.

5.4 WRITE-READ-COMPARE

THIS ROUTINE STARTS BY SEEKING HOME. ONCE IT IS THERE A WRITE COMMAND IS GIVEN AND THEN THE SAME RECORD IS READ. AFTER THAT IT IS COMPARED WORD FOR WORD. IF IT COMPARES UNEQUAL IT WILL WRITE AND READ AGAIN. IF ALL THE RECORD READ IS THE SAME AS THAT STORED IN THE PROGRAM THE HEAD MOVES TO THE CENTER AND BACK TO INDICATE A CORRECT WRITE-READ-COMPARE. IF BIT 12 IS ON THE HEAD WILL NOT GO TO THE CENTER AND BACK WHEN A CURRECT OPERATION IS PREFORMED BUT WILL CONTINUE WRITING, READING AND CHECKING. THE DATA IS WRITTEN ON TRACK ZERO AND IS PART OF THE PROGRAM (SEE LISTING). THIS WILL CONTINUE UNTIL A NEW ROUTINE IS SELECTED OR A CE SERVICE STOP IS SENSED.

6. APPENDIX (NONE)

---------- LAST PAGE ----------

```
0036                    ABS
                        ORG     /36                                     8A200020
                  ********************************************************8A200030
                  *                                                      *8A200040
                  *                                                      *8A200050
                  *       IF THIS PROG IS TO BE USED FOR A MACHINE       *8A200060
                  * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH       *8A200070
                  * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST     *8A200080
                  * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A       *8A200090
                  * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG        *8A200100
                  * GENERATOR WRITE-UP FOR PROCEDURE.                    *8A200110
                  *                                                      *8A200120
                  ********************************************************8A200130
                  *                                                      *8A200140
                  *                                                      *8A200150
                  *             1810 DISC DRIVE                          *8A200160
                  *             ***************                          *8A200170
                  *                                                      *8A200180
                  * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE     *8A200190
                  *                                                      *8A200200
                  *                                                      *8A200210
                  *                                                      *8A200220
                  *             CE BIT SW SETTINGS                       *8A200230
                  *                                                      *8A200240
                  *             00XX0000   MOVE 1 TRK OUT AND IN         *8A200250
                  *             00XX0001   OUT 1 TRK AT A TIME           *8A200260
                  *             00XX0010   IN 1 TRK AT A TIME            *8A200270
                  *             00XX0011   WR-RD-CK INDICATE             *8A200280
                  *             00XX1011   WR-RD-CK-NO INDICATE          *8A200290
                  *             00001111   CE SERVICE STOP               *8A200300
                  *             11111111   TERMINATE PROGRAM             *8A200310
                  *                                                      *8A200320
                  *             X- SELECT DISC DRIVE- 00 1ST DRIVE       *8A200330
                  *                                   01 1ST DRIVE       *8A200340
                  *                                   10 2ND DRIVE       *8A200350
                  *                                   11 3RD DRIVE       *8A200360
                  *                                                      *8A200370
                  *             ALL OTHER SETTINGS ARE VOID              *8A200380
                  *                                                      *8A200390
                  *                                                      *8A200400
                  * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION     *8A200410
                  * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.           *8A200420
                  ********************************************************8A200430
                  *                                                      *8A200440
                  *             AUX PROG ENTRY POINTS                    *8A200450
                  *             *********************                    *8A200460
                  *                                                      *8A200470
                  *             1ST PASS ENTRY                           *8A200480
                  *                                                      *8A200490
                  *                                                      *8A200500
                  * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN    *8A200510
                  * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER         *8A200520
                  *                                                      *8A200530
0036 0 1000             NOP                                             8A200540
0037 0 1000             NOP                                             8A200550
0038 0 1000             NOP                                             8A200560
0039 0 1000             NOP                                             8A200570
003A 0 6500 70D7        LDX  L1 NNNN        RESTORE LOCATION NICE       8A200580
003C 0 6D00 0035        STX  L1 /35         * IN AUX LOADER             8A200590
                        *                                               8A200600
003E 0 4C00 00D9        BSC  L  SETUP                                   8A200610
                  ********************************************************8A200620
                  *                                                      *8A200630
                  *             ALL BUT 1ST PASS ENTRY POINT             *8A200640
                  *             ****************************             *8A200650
                  *                                                      *8A200660
0040 0 082D       RETUR XIO     CEON      SET DEVICE IN CE MODE         8A200670
0041 0 082E           XIO     DSW         SENSE DSW                     8A200680
0042 0 0827           XIO     SENBI       SENSE CE PROG SW TO ACCUM     8A200690
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0043 0 E026             AND     SENBI       BLOCK OUT PROG SEL SW       8A200700
0044 0 F025             EOR     SENBI                                   8A200710
0045 0 4C18 005E        BSC  L  NOTRD,+-    BR TERMINATE PROGRAM        8A200720
                        *                                               8A200730
0047 0 F026             EOR     CEON                                    8A200740
0048 0 4C18 0062        BSC  L  SAVE2,+-    BR CE SERVICE STOP          8A200750
                        *                                               8A200760
004A 0 0825             XIO     DSW         SENSE DSW                   8A200770
004B 0 1002             SLA     2                                       8A200780
004C 0 4C10 0062        BSC  L  SAVE2,-                                 8A200790
                        *                                               8A200800
                        *       IF BIT 2 IS NOT ON IT MEANS             8A200810
                        *       THAT THE DISK IS NOT IN CE MODE         8A200820
                        *                                               8A200830
004E 0 081B             XIO     SENBI                                   8A200840
004F 0 E019             AND     K0003       SAVE BITS 14 AND 15         8A200850
0050 0 F02D             EOR     CESW                                    8A200860
0051 0 4C98 0063        BSC  I  WORK,+-     GO TO WORK, SAME RTE        8A200870
0053 0 F02A             EOR     CESW                                    8A200880
0054 0 D029             STO     CESW        SAVE CE PROG SWITCH         8A200890
0055 0 D001             STO     GO+1                                    8A200900
0056 0 6500 0000  GO    LDX  L1 /0000                                   8A200910
0058 0 4D80 005A        BSC  I1 TABLE       SELECT ROUTINE              8A200920
                        *                                               8A200930
005A 0 007F       TABLE DC      CEGO        MOVE 1 TRK OUT + IN         8A200940
005B 0 008C           DC      OUT         OUT 1 TRK AT A TIME         8A200950
005C 0 00A3           DC      IN          IN 1 TRK AT A TIME          8A200960
005D 0 00B9           DC      WRIT        WRITE-READ-CHECK            8A200970
                  ********************************************************8A200980
                  *                                                      *8A200990
                  *       EXIT POINTS TO AUX LOADER                      *8A201000
                  *       *************************                      *8A201010
                  *                                                      *8A201020
                  *       TERMINATE EXIT POINT                           *8A201030
                  *                                                      *8A201040
                  *                                                      *8A201050
005E 0 6500 0813  NOTRD LDX  L1 WWWW                                    8A201060
0060 0 69A3             STX   1 /04                                     8A201070
0061 0 080A             XIO     CEOFF       REMOVE DEVICE FROM CE MODE  8A201080
                        *                                               8A201090
                        *       NORMAL EXIT POINT                       8A201100
                        *                                               8A201110
0062 0 70AA       SAVE2 MDX     QQQQ        EXIT TO AUX LOADER          8A201120
                  ********************************************************8A201130
                  *                                                      *8A201140
0063 0 007F       WORK  DC      CEGO        RETURN TO WORK ADDR         8A201150
0064 0 70FD             MDX     SAVE2                                   8A201160
                  ********************************************************8A201170
                  *                                                      *8A201180
0065 0 0027       WAREA DC      39          WORD COUNT                  8A201190
                        *                                               8A201200
                        *       THE WRITE DATA WILL BE THE PROGRAM      8A201210
                        *                                               8A201220
0066 0 0000             DC      /0000       DISC ADDRESS                8A201230
0067 0 1313             DC      /1313                                   8A201240
                        *                                               8A201250
0068 0 0068       FAST  DC      FAST        IF ZERO FAST ACCESS         8A201260
0069 0 0003       K0003 DC      /0003       CONSTANT                    8A201270
                  ********************************************************8A201280
                  *                                                      *8A201290
                  *       CONSTANTS AND/OR IOCC WORDS                    *8A201300
                  *                                                      *8A201310
006A   0000             BSS  E  0                                       8A201320
006A 0 00FF       SENBI DC      /00FF       CONSTANT                    8A201330
006B 0 0760           DC      /0760       SENSE CE SWITCHES           8A201340
006C 0 703B       CEOFF DC      TTTT        CONSTANT                    8A201350
006D 0 0000           DC      /0000       CE OFF WORD                 8A201360
006E 0 00F0       CEON  DC      /00F0       CONSTANT                    8A201370
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006F 0 0001                DC      /0001       CE ON WORD                    8A201380
0070 0 0000     DSW        DC      /0000       CTR USED FOR TRK COUNT        8A201390
0071 0 0701                DC      /0701       RESET DEVICE STATUS           8A201400
0072 0 0001     CENTR      DC      /0001       1 STEP TOWARDS CENTER         8A201410
0073 0 0400                DC      /0400       IOCC CONTROL WORD             8A201420
0074 0 0001     EDGE       DC      /0001       1 STEP TOWARDS EDGE           8A201430
0075 0 0404                DC      /0404       IOCC CONTROL WORD             8A201440
0076 0 00D8     READ       DC      RAREA       REFERES  COUNT TABLE          8A201450
0077 0 0600                DC      /0600       READ IOCC                     8A201460
0078 0 0065     WRITE      DC      WAREA       REFERES COUNT TABLE           8A201470
0079 0 0500                DC      /0500       WRITE IOCC WORD               8A201480
007A 0 00CA     I202       DC      202         MOVE 202 TRKS IN              8A201490
007B 0 0400                DC      /0400       IOCC CONTROL WORD             8A201500
007C 0 00CA     O202       DC      202         MOVE 202 TRKS OUT             8A201510
007D 0 0404                DC      /0404       IOCC CONTROL WORD             8A201520
007E 0 0000     CESW       DC      /0000       CE PROGRAM SW SETTING         8A201530
                ********************************************************** 8A201540
                *                                                          * 8A201550
                *          IN ONE TRACK AND OUT ONE TRACK                  * 8A201560
                *                                                          * 8A201570
                *          THIS ROUTINE SEEKS HOME AND MOVES               * 8A201580
                *          TOWARD THE CENTER ONE TRACK AND                 * 8A201590
                *          THEN BACK TO HOME. THIS IS REPEATED             * 8A201600
                *          UNTIL THE ROUTINE IS CHANGED OR A CE            * 8A201610
                *          SERVICE STOP IS SENSED.                         * 8A201620
                *                                                          * 8A201630
                ************************************                      8A201640
                *                                                         8A201650
007F 0 4050     CEGO       BSI     GOHOM       MOVE HEAD TO HOME     SC  8A201660
0080 0 7400 0068           MDX  L  FAST,0                                  8A201670
0082 0 7004                MDX     CEGOX                                   8A201680
0083 0 6101                LDX     1 1                                     8A201690
0084 0 69ED                STX     1 CENTR     INITIALIZE                  8A201700
0085 0 6100                LDX     1 0                                     8A201710
0086 0 69ED                STX     1 EDGE      INITIALIZE                  8A201720
0087 0 08EA     CEGOX      XIO     CENTR       MOVE IN ONE TRACK           8A201730
0088 0 40DA                BSI     WORK        SET UP RETURN ADDR    SC    8A201740
                *                                                         8A201750
0089 0 08EA                XIO     EDGE                                    8A201760
008A 0 40D8                BSI     WORK        SET UP RETURN ADDR    SC    8A201770
                *                                                         8A201780
008B 0 70FB                MDX     CEGOX                                   8A201790
                ********************************************************** 8A201800
                *                                                          * 8A201810
                *          IN 202 AND OUT 1 TRK AT A TIME                  * 8A201820
                *                                                          * 8A201830
                *          THIS ROUTINE SEEKS HOME AND THEN                * 8A201840
                *          MOVES TO THE CENTER (202 TRACKS) AND            * 8A201850
                *          THEN MOVES TOWARD THE EDGE ONE TRACK            * 8A201860
                *          AT A TIME. THIS IS REPEATED UNTIL               * 8A201870
                *          THE ROUTINE IS CHANGED OR A CE                  * 8A201880
                *          SERVICE IS SENSED.                              * 8A201890
                *                                                          * 8A201900
                ************************************                      8A201910
                *                                                         8A201920
008C 0 4043     OUT        BSI     GOHOM       MOVE HEAD TO HOME     SC  8A201930
008D 0 08EC                XIO     I202        MOVE 202 TRACKS IN          8A201940
008E 0 40D4                BSI     WORK        SET UP RETURN ADDR    SC    8A201950
                *                                                         8A201960
008F 0 6500 00CA           LDX  L1 202                                     8A201970
0091 0 69DE                STX     1 DSW                                   8A201980
0092 0 7400 0068           MDX  L  FAST,0      IS IT FAST                  8A201990
0094 0 7002                MDX     CONT        * NO                        8A202000
0095 0 71FF                MDX     1 -1        * YES                       8A202010
0096 0 69DD                STX     1 EDGE      INITIALIZE                  8A202020
                *                                                         8A202030
0097 0 08DC     CONT       XIO     EDGE        MOVE 1 TRK OUT              8A202040
0098 0 40CA                BSI     WORK        SET UP RETURN ADDR    SC    8A202050
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                *                                                         8A202060
0099 0 7400 0068           MDX  L  FAST,0      IS IT FAST                  8A202070
009B 0 7002                MDX     *+2         * NO                        8A202080
009C 0 74FF 0074           MDX  L  EDGE,-1     * YES                       8A202090
009E 0 1000                NOP                 KEEP THIS NOP               8A202100
009F 0 74FF 0070           MDX  L  DSW,-1      REDUCE TRACK COUNT          8A202110
00A1 0 70F5                MDX     CONT                                    8A202120
00A2 0 70E9                MDX     OUT                                     8A202130
                ********************************************************** 8A202140
                *                                                          * 8A202150
                *          IN 1 TRK AT A TIME AND OUT 202                  * 8A202160
                *                                                          * 8A202170
                *                                                          * 8A202180
                *          THIS ROUTINE SEEKS HOME AND THEN                * 8A202190
                *          MOVES ONE TRACK AT A TIME UNTIL IT              * 8A202200
                *          REACHES THE CENTER. THEN A COMMAND              * 8A202210
                *          IS GIVEN TO SEND THE HEAD TO HOME.              * 8A202220
                *          THIS IS REPEATED UNTIL THE ROUTINE              * 8A202230
                *          IS CHANGED OR A CE SERVICE STOP                 * 8A202240
                *          IS SENSED.                                      * 8A202250
                *                                                          * 8A202260
                ************************************                      8A202270
                *                                                         8A202280
00A3 0 402C     IN         BSI     GOHOM       MOVE HEAD TO HOME     SC  8A202290
00A4 0 6500 00CA IN1       LDX  L1 202                                     8A202300
00A6 0 69C9                STX     1 DSW                                   8A202310
00A7 0 7400 0068           MDX  L  FAST,0      IS IT FAST                  8A202320
00A9 0 7002                MDX     IN2         * NO                        8A202330
00AA 0 1010                SLA     16          * YES                       8A202340
00AB 0 D0C6                STO     CENTR                                   8A202350
00AC 0 08C5     IN2        XIO     CENTR       MOVE 1 TRACK                8A202360
00AD 0 40B5                BSI     WORK        SET UP RETURN ADDR    SC    8A202370
                *                                                         8A202380
00AE 0 7400 0068           MDX  L  FAST,0      IS IT FAST                  8A202390
00B0 0 7002                MDX     *+2         * NO                        8A202400
00B1 0 7401 0072           MDX  L  CENTR,1     * YES                       8A202410
00B3 0 74FF 0070           MDX  L  DSW,-1      REDUCE TRACK COUNT          8A202420
00B5 0 70F6                MDX     IN2                                     8A202430
                *                                                         8A202440
00B6 0 08C5                XIO     0202        MOVE 202 TRACKS OUT         8A202450
00B7 0 40AB                BSI     WORK        SET UP RETURN ADDR    SC    8A202460
                *                                                         8A202470
00B8 0 70EB                MDX     IN1                                     8A202480
                ********************************************************** 8A202490
                *                                                          * 8A202500
                *          WRITE AND READ AT HOME POSITION                 * 8A202510
                *                                                          * 8A202520
                *          THIS ROUTINE WILL WRITE A RECORD AND            * 8A202530
                *          THEN READ IT. IF IT COMPARES OKAY THE           * 8A202540
                *          HEAD WILL MAKE A PASS TO THE CENTER             * 8A202550
                *          AND BACK UNLESS THE NO INDICATE                 * 8A202560
                *          SWITCH, BIT 12, HAS BEEN SET. IT                * 8A202570
                *          WILL THEN GO TO REPEAT THE WRITE-               * 8A202580
                *          READ-CHECK WITHOUT GOING TO THE                 * 8A202590
                *          CENTER. THIS WILL BE HELPFUL FOR                * 8A202600
                *          INTERMITTANT FAILURES. THIS WILL                * 8A202610
                *          CONTINUE UNTIL A CE SERVICE STOP OR             * 8A202620
                *          A DIFFERENT ROUTINE IS SENSED.                  * 8A202630
                *                                                          * 8A202640
                ************************************                      8A202650
                *                                                         8A202660
00B9 0 4016     WRIT       BSI     GOHOM       MOVE HEAD TO HOME     SC  8A202670
00BA 0 08BD                XIO     WRITE       WRITE COMMAND               8A202680
00BB 0 40A7                BSI     WORK        SET UP RETURN ADDR    SC    8A202690
                *                                                         8A202700
00BC 0 08B9                XIO     READ        READ                        8A202710
00BD 0 40A5                BSI     WORK        SET UP RETUTN ADDR    SC    8A202720
                *                                                         8A202730
```

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00BE 0 61D9              LDX   1 -39        USED FOR CHECKING          8A202740
00BF 0 C500 008D  WRCK   LD   L1 WAREA+40   STORED DATA                8A202750
00C1 0 F500 0100         EOR  L1 RAREA+40   READ DATA                  8A202760
00C3 0 4C20 00B9         BSC  L  WRIT,Z     BCH ON UNEQUAL. DO         8A202770
                *                           READ-WRITE AGAIN.          8A202780
00C5 0 7101              MDX   1 1                                     8A202790
00C6 0 70F8              MDX     WRCK                                  8A202800
                *                                                      8A202810
00C7 0 08A2              XIO     SENBI      SENSE BIT SWITCHES         8A202820
00C8 0 1803              SRA     3          CHECK BIT 12               8A202830
00C9 0 4C04 00B9         BSC  L  WRIT,E     BCH ON NOT INDICATE        8A202840
                *                                                      8A202850
                *           ***************************************    8A202860
                *                                                      8A202870
                *           HEAD TO CENTER AND BACK TO INDICATE        8A202880
                *           A SUCCESSFUL OPERATION.                    8A202890
                *                                                      8A202900
                *           ***************************************    8A202910
                *                                                      8A202920
00CB 0 08AE              XIO     I202       MOVE IN 202 TRACKS         8A202930
00CC 0 4096              BSI     WORK       SET UP RETURN ADDR    SC   8A202940
                *                                                      8A202950
00CD 0 08AE              XIO     O202       MOVE OUT 202 TRACKS        8A202960
00CE 0 4094              BSI     WORK       SET UP RETUTN ADDR    SC   8A202970
                *                                                      8A202980
00CF 0 70E9              MDX     WRIT                                  8A202990
                ********************************************************8A203000
                *                                                      8A203010
                *           MOVE HEAD TO HOME                          8A203020
                *                                                      8A203030
                *           THIS ROUTINE CHECKS FOR THE HEAD           8A203040
                *           HOME. IF IT IS NOT, A MOVE OF ONE          8A203050
                *           TRACK TOWARD THE OUT SIDE IS GIVEN         8A203060
                *           AND CHECKED AGAIN UNTIL IT REACHES         8A203070
                *           HOME.                                      8A203080
                *                                                      8A203090
                *           ************************************       8A203100
                *                                                      8A203110
00D0 0 0000      GOHOM DC       /0000      RETURN ADDR           SE   8A203120
00D1 0 089E              XIO     DSW        SENSE DSW                  8A203130
00D2 0 1004              SLA     4          SAVE BIT 4                 8A203140
00D3 0 4CA8 00D0         BSC  I  GOHOM,+Z   RETURN IF HOME         SX   8A203150
                *                                                      8A203160
00D5 0 08A6              XIO     O202       MOVE TO THE EDGE           8A203170
00D6 0 408C              BSI     WORK       SET UP RETURN ADDR    SC   8A203180
00D7 0 70F9              MDX     GOHOM+1                               8A203190
                ********************************************************8A203200
                *                                                      8A203210
00D8 0 0027      RAREA DC       39         READ WORD COUNT            8A203220
                *                                                      8A203230
                *           THE INSTRUCTIONS IN THIS READ AREA         8A203240
                *           WILL BE USED ONLY THE FIRST TIME           8A203250
                *           AND WILL BE WIPED OUT BY A READ.           8A203260
                *                                                      8A203270
                *           ************************************       8A203280
                *                                                      8A203290
00D9 0 C092      SETUP LD       CEOFF      PLACE BRANCH               8A203300
00DA 0 D400 0004         STO  L  /04        TO RETUR LABEL             8A203310
                *           ************************************       8A203320
                *                                                      8A203330
                *           SELECT DISC DRIVE                          8A203340
                *                                                      8A203350
00DC 0 088D              XIO     SENBI      SENSE BIT SWITCHES         8A203360
00DD 0 E019              AND     K0030      SAVE BITS 10 AND 11        8A203370
00DE 0 1804              SRA     4                                     8A203380
00DF 0 D001              STO     GOT+1                                 8A203390
00E0 0 6500 0000 GOT     LDX  L1 /0000                                 8A203400
00E2 0 C500 00F8         LD   L1 AREA       GET AREA CODE OF DRIVE     8A203410
```



```
00E4 0 D013              STO     AREA       STORE AREA CODE            8A203420
                *           ************************************       8A203430
                *                                                      8A203440
                *           ADD AREA CODE TO THE I/O COMMD.            8A203450
                *                                                      8A203460
00E5 0 6111              LDX   1 17                                    8A203470
00E6 0 C16C      BUILD LD       1 CEOFF    GET IOCC WORD AND          8A203480
00E7 0 E810              OR      AREA       * OR IN AREA CODE          8A203490
00E8 0 D16C              STO   1 CEOFF      * AND PLACE BACK           8A203500
00E9 0 71FE              MDX   1 -2                                    8A203510
00EA 0 70FB              MDX     BUILD                                 8A203520
00EB 0 6100              LDX   1 0                                     8A203530
00EC 0 0970              XIO   1 DSW        SENSE DSW                  8A203540
00ED 0 100D              SLA     13         CK FOR FAST                8A203550
00EE 0 4C10 00F5         BSC  L  END,-      BCH IF NOT FAST ACC        8A203560
00F0 0 C972              LDD   1 CENTR                                 8A203570
00F1 0 1010              SLA     16         CLEAR CYLINDER COUNT       8A203580
00F2 0 D168              STO   1 FAST       INDICATE FAST ACC          8A203590
00F3 0 D974              STO   1 EDGE                                  8A203600
00F4 0 D97C              STD   1 O202                                  8A203610
                *                                                      8A203620
00F5 0 4C00 0040 END     BSC  L  RETUR                                 8A203630
                *                                                      8A203640
00F7 0 0030      K0030 DC       /0030      CONSTANT AND STORAGE       8A203650
00F8 0 2000      AREA  DC       /2000      AREA CODE OF DRIVE SELECT  8A203660
00F9 0 2000              DC      /2000      1ST 1810 AREA CODE         8A203670
00FA 0 4000              DC      /4000      2ND 1810                   8A203680
00FB 0 4800              DC      /4800      3RD 1810                   8A203690
                *                           * CHANGE THESE VALUES IF   8A203700
                *                           * 1810 ON ANOTHER AREA     8A203710
                *                                                      8A203720
                *                                                      8A203730
                *                                                      8A203740
                ********************************************************8A203750
                *                                                      8A203760
000D            QQQQ  EQU      /D         GO TO LOADER AT /D         8A203770
70D7            NNNN  EQU      /70D7      FOR CARD LOADER AT /35     8A203780
0813            WWWW  EQU      /0813      SET IN LOADER AT /04       8A203790
703B            TTTT  EQU      /7000+RETUR-/4-1  THIS IS EQUAL       8A203800
                *                           TO THE BCH FROM THE        8A203810
                *                           LOADER TO RETUR IN         8A203820
                *                           THIS PROGRAM.              8A203830
                ********************************************************8A203840
00FC   00FC              END     *-1        END CARD NEVER USED        8A203850
  NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

```
AREA    00F8  00E2 00E4 00E7
BUILD   00E6  00EA
CEGO    007F  005A 0063
CEGOX   0087  0082 008B
CENTR   0072  0084 0087 00AB 00AC 00B1 00F0
CEOFF   006C  0061 00D9 00E6 00E8
CEON    006E  0040 0047
CESW    007E  0050 0053 0054
CONT    0097  0094 00A1
DSW     0070  0041 004A 0091 009F 00A6 00B3 00D1 00EC
EDGE    0074  0086 0089 0096 0097 009C 00F3
END     00F5  00EE
FAST    0068  0068 0080 0092 0099 00A7 00AE 00F2
GO      0056  0055
GOHOM   00D0  007F 008C 00A3 00B9 00D3 00D7
GOT     00E0  00DF
IN      00A3  005C
IN1     00A4  00B8
IN2     00AC  00A9 00B5
I202    007A  008D 00CB
K0003   0069  004F
K0030   00F7  00DD
NNNN    70D7  003A
NOTRD   005E  0045
OUT     008C  005B 00A2
O202    007C  00B6 00CD 00D5 00F4
QQQQ    000D  0062
RAREA   00D8  0076 00C1
READ    0076  00BC
RETUR   0040  00F5
SAVE2   0062  0048 004C 0064
SENBI   006A  0042 0043 0044 004E 00C7 00DC
SETUP   00D9  003E
TABLE   005A  0058
TTTT    703B  006C
WAREA   0065  0078 00BF
WORK    0063  0051 0088 008A 008E 0098 00AD 00B7 00BB 00BD 00CC 00CE 00D6
WRCK    00BF  00C6
WRIT    0089  005D 00C3 00C9 00CF
WRITE   0078  00BA
WWWW    0813  005E
END OF ASSEMBLY
```

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TABLE OF CONTENTS

1. PURPOSE

THE PURPOSE OF THE AUX 1816 EXERCISER PROGRAM IS TO TEST THE OPERATION OF THE 1816 PRINTER-KEYBOARD.

2. PREREQUISITES

2.1 DEVICE AREA CODE

IF THE DEVICE TO BE TESTED USES A CUSTOMER ASSIGNED AREA CODE, A NEW AUX PROGRAM DECK OR PAPER TAPE MUST BE CREATED. THE PROCEDURE IS PRESENTED IN THE DOCUMENTATION OF THE AUX PROGRAM GENERATOR UTILITY (PID 08AC - CARD VERSION, PID 08AD - PAPER TAPE VERSION) THE PROGRAM LOCATIONS THAT MUST BE ALTERED ARE SPECIFIED BY A STATEMENT AT THE BEGINNING OF THE PROGRAM LISTING.

2.2 CARD INPUT

—CAUTION—

DO NOT ATTEMPT TO LOAD THIS PROGRAM IF THE CARD READER SHARES A CHANNEL WITH ANOTHER DEVICE WHILE THAT DEVICE IS OPERATING.

THE AUX DIAGNOSTIC LOADER (PID 08A1) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PROGRAM DECK CAN BE LOADED.

2.3 PAPER TAPE INPUT

THE AUX DIAGNOSTIC LOADER (PAPER TAPE - PID 08A0) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PAPER TAPE PROGRAM CAN BE LOADED.

3. USE PROCEDURES

BEFORE PROCEEDING, A PROGRAM MUST BE IN MAIN-CORE STORAGE RUNNING OR AT A WAIT INSTRUCTION READY TO START RUNNING.

3.1 CARD INPUT LOADING PROCEDURE

A. BE SURE THE 1442 IS AVAILABLE AND ALL CARDS ARE REMOVED.

B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT TWO TIMES TO ASSURE THE 1442 IS IN CE MODE.
D. PLACE THE SEVEN CARDS OF THE AUX 1816 EXERCISER PROGRAM IN THE HOPPER OF THE 1442 AND FOLLOW WITH A BLANK CARD.

NOTE

EACH PROGRAM CARD HAS A CHARACTER ENTERED INTO COLUMN 80. THIS CHARACTER DEFINES THE CARD'S POSITION IN THE DECK ACCORDING TO THE FOLLOWING SEQUENCE, X(FIRST), THEN 0, 1, 2, 3, 4, AND 5. THE CARDS CANNOT BE READ UNLESS THEY ARE PLACED IN THE HOPPER IN THE CORRECT ORDER.

E. DEPRESS THE 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
F. PLACE ALL CE PROGRAM SWITCHES IN THEIR OFF POSITION.
G. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO LOAD THE PROGRAM. (IF THE HOPPER OF THE 1442 DOES NOT GO EMPTY THE CHECK-SUM ROUTINE IN THE AUX DIAGNOSTIC LOADER MOST LIKELY REJECTED THE PROGRAM. CHECK THE CARDS FOR PROPER SEQUENCE AND RETURN TO STEP A AND TRY AGAIN).
H. GO TO SECTION 3.3

3.2 PAPER TAPE INPUT LOADING PROCEDURE

A. BE SURE THAT THE 1054 TAPE READER IS AVAILABLE AND THAT THERE IS NO TAPE IN THE READER.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT PUSHBUTTON TWO TIMES TO ASSURE THAT THE 1054 IS PLACED IN CE MODE.
D. PLACE THE FIRST TAPE CHARACTER OF THE PROGRAM DIRECTLY ABOVE THE SENSE PINS IN THE 1054 READER. (THE CHECK-SUM ROUTINE OF THE AUX DIAGNOSTIC LOADER WILL REJECT THE PROGRAM IF THE AUX TAPE IS LOADED INCORRECTLY).
E. PLACE ALL CE PROGRAM SWITCHES IN THEIR OFF POSITION.
F. DEPRESS CE LEVEL INTERRUPT TO LOAD THE PROGRAM. TAPE ACTION SHOULD START AND CONTINUE UNTIL THE ENTIRE AUX PROGRAM HAS BEEN READ. WHEN THE READER STOPS, THE FIRST TAPE FEED HOLE CHARACTER FOLLOWING THE AUX PROGRAM DATA SHOULD BE LOCATED DIRECTLY ABOVE THE 1054 SENSE PINS FOR A CORRECTLY STORED PROGRAM. IF THE TAPE DID NOT STOP AT SAID LOCATION, RETURN TO STEP A TO RELOAD PROG.

3.3 TYPICAL PROGRAM OPERATING PROCEDURE

A. ASSURE THAT THE PROCEED LIGHT ON THE KEYBOARD IS ON. IF THIS IS NOT THE CASE THE AUX DIAGNOSTIC LOADER MOST LIKELY REJECTED THE PROGRAM AND THE LOADING PROCEDURE SHOULD BE REPEATED.
B. DEPRESS THE REQUEST KEY ON THE 1816 KEYBOARD AND THE PROCEED LIGHT ON THE KEYBOARD SHOULD REMAIN ON (BUT LIGHT MAY FLICKER).
C. USE THE KEYBOARD TO TYPE ONE OR MORE CHARACTERS AND/OR SELECT ONE OR MORE CONTROL FUNCTIONS (FOR EXAMPLE, SPACE, SHIFT, ETC.).

NOTE

A CARRIER COMMAND WILL BE EXECUTED IF THE 1816 PRINTER-KEYBOARD FAILS TO RESPOND PROPERLY WHEN A CHARACTER OR CONTROL FUNCTION IS SELECTED. THE ER FLD KEY CONTROLS SHIFT-TO-RED, THE ER CHR KEY CONTROLS THE BACKSPACING FUNCTION, THE EOF KEY CONTROLS THE SHIFT-TO-BLACK FUNCTION AND NUMERIC T CONTROLS LINE FEED.

3.4 CE SERVICE STOP

THE CE SERVICE STOP ROUTINE STOPS THE 1816 PROGRAM BUT DOES NOT TERMINATE THE PROGRAM. IT IS RECOMMENDED TO USE THIS SETTING WHEN ADJUSTING THE 1816.

3.5 TERMINATING PROCEDURE

A. SET THE CE PROGRAM SWITCHES TO 00001111 -CE SERVICE STOP. (THE ONLY REASON FOR USING THIS SETTING IS TO STOP ANY DEVICE ACTION WHICH MAY CAUSE AN INTERRUPT).
B. SET THE CE PROGRAM SWITCHES TO 11111111 -TERMINATOR SETTING, AND DEPRESS THE CE INTERRUPT LEVEL PUSHBUTTON ONCE AND ONLY ONCE. (A SECOND DEPRESSION OF THE CE INT. PUSHBUTTON WILL RESULT IN THE AUX DIAGNOSTIC LOADER TRYING TO LOAD A NEW PROGRAM IF THE READER IS READY).

NOTE

TO OFFSET THE POSSIBILITY THAT THE INPUT DEVICE MIGHT BE MALFUNCTIONING THE NEXT TIME THE 1800 SYSTEM NEEDS SERVICING THE FOLLOWING PROGRAM SHOULD BE LOADED INTO AUX CORE AT THE CONCLUSION OF EACH SERVICE CALL -

A. CARD INPUT

LOAD THE AUX 1442 PACKED READ EXERCISE PROGRAM (PID 08AA) AFTER ASSURING THE PROGRAM IS BY PUNCHING CARDS, CE SWITCH SETTING 00000000, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000010 AND LEAVE THE SWITCHES AT THIS SETTING, TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT PUSHBUTTON.

B. TAPE INPUT

LOAD THE AUX 1054/55 EXERCISER PROGRAM (PID 08A8). AFTER ASSURING THE PROGRAM IS IN BY PUNCHING TAPE, CE SWITCH SETTINGS 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT PUSHBUTTON.

4. PRINTOUTS

THE PRINTOUTS OF THE AUX 1816 EXERCISER PROGRAM ARE DETERMINED BY THE OPERATOR. USING THE KEYBOARD, THE OPERATOR MAY TYPE ANY CHARACTER(S) THAT HE DESIRES. A CARRIER COMMAND WILL BE EXECUTED IF THE 1816 PRINTER-KEYBOARD FAILS TO RESPOND PROPERLY WHEN A CHARACTER OR CONTROL FUNCTION IS SELECTED.

5. COMMENTS

A PROGRAM MUST BE IN MAIN-CORE STORAGE AND MUST BE RUNNING OR READY TO START BEFORE THE AUX 1816 EXERCISER PROGRAM CAN BE LOADED.

ASSUMING THAT THE AUX DIAGNOSTIC LOADER IS PRESENT IN AUXILIARY-STORAGE AND THE PROGRAM IS READY TO BE READ, DEPRESSING THE CE LEVEL INTERRUPT PUSHBUTTON CAUSES THE PROGRAM TO BE STORED AND STARTED.
AFTER STARTING, THE PROGRAM SETS THE 1816 PRINTER-KEYBOARD TO THE CE MODE AND SENSES THE CE PROGRAM SWITCHES TO DETERMINE WHETHER A PROGRAM TERMINATOR (11111111) HAS BEEN SELECTED. IF A PROGRAM TERMINATOR IS SENSED, A TRANSFER ADDRESS IN THE LOADER PROGRAM IS RESTORED TO ITS ORIGINAL CONTENTS. IN ADDITION, THE CE MODE OF THE 1816 PRINTER-KEYBOARD IS CLEARED, AND CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM. IF A PROGRAM TERMINATOR IS NOT SENSED, THE PROGRAM TESTS FOR THE CE SERVICE STOP CONTROL OPTION (00001111). IF A CE SERVICE STOP IS SENSED, AN XIO COMMAND IS ISSUED TO TURN OFF THE KEYBOARD LIGHT. IF A CE SERVICE STOP IS NOT SENSED, THE PROGRAM SENSES THE DSW (DEVICE STATUS WORD) OF THE 1816 PRINTER-KEYBOARD AND THEN DETERMINES IF A TYPEWRITER-RESPONSE INTERRUPT IS PRESENT. ASSUMING THAT THERE HAS BEEN NO OPERATOR ACTION (THAT IS, NO CONTROL FUNCTION OR CHARACTER IS SELECTED), THE PROGRAM CHECKS FOR KEYBOARD-RESPONSE AND MANUAL-REQUEST INTERRUPTS AND THEN RETURNS CONTROL TO THE CUSTOMER'S MAIN-LINE PROGRAM.

5.1 SELECTING KEYBOARD REQUEST (KBD REQ)

A MANUAL-REQUEST INTERRUPT IS GENERATED WHEN THE KBD REQ KEY IS DEPRESSED. WHEN THE PROGRAM SENSES THE INTERRUPT, IT TURNS ON THE PROCEED INDICATOR AND THEN RETURNS CONTROL TO THE CUSTOMER'S MAIN-LINE PROGRAM.

5.2 SELECTING A CHARACTER OR CONTROL FUNCTION

WITH THE PROCEED INDICATOR ON, A KEYBOARD-RESPONSE INTERRUPT IS GENERATED WHEN THE OPERATOR SELECTS A CHARACTER OR A CONTROL COMMAND. WHEN THE INTERRUPT IS SERVICED THE SELECTED CHARACTER OR CONTROL FUNCTION IS SENSED AND COMPARED WITH ENTRIES IN A PROGRAM TABLE. THIS TABLE CONTAINS ALL OF THE CONTROL-FUNCTION AND CHARACTER CODES THAT ARE PECULIAR TO THE 1816. IF A MATCH IS ACHIEVED, A CORRESPONDING WORD IS SELECTED FROM A TABLE CONTAINING ALL THE CONTROL-FUNCTION AND CHARACTER CODES OF THE PRINTER. THEN THE OPERATION INDICATED BY THE WORD IS EXECUTED. AFTERWARDS, CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM. IF A MATCH CANNOT BE ACHIEVED, A CARRIER COMMAND IS EXECUTED TO INDICATE AN ERROR, AND CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM.

5.3 TYPEWRITER-RESPONSE INTERRUPT

A TYPEWRITER-RESPONSE INTERRUPT IS GENERATED WHEN THE TYPEWRITER FINISHES EXECUTING A TYPE-CHARACTER OR CONTROL-FUNCTION OPERATION. WHEN THE INTERRUPT IS SERVICED, THE PROGRAM TURNS ON THE PROCEED INDICATOR, AND ANOTHER CHARACTER OR CONTROL-FUNCTION MAY BE SELECTED.

6. APPENDIX (NONE)

```
                    ABS                                                 8A400000
028C                ORG     /36                                         8A400010
                ************************************************        8A400020
                *                                                       8A400030
                *       IF THIS PROG IS TO BE USED FOR A MACHINE        8A400040
                * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH        8A400050
                * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST      8A400060
                * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A        8A400070
                * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG         8A400080
                * GENERATOR WRITE-UP FOR PROCEDURE.                     8A400090
                *                                                       8A400100
                ************************************************        8A400110
                *                                                       8A400120
                *                                                       8A400130
                *           KEYBOARD TO TYPEWRITER                      8A400140
                *           **********************                      8A400150
                *                                                       8A400160
                * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE      8A400170
                *                                                       8A400180
                *           NOTE                                        8A400190
                *                                                       8A400200
                *           END OF FIELD KEY GIVES SH TO BLACK          8A400210
                *           ERROR FIELD KEY  GIVES SH TO RED            8A400220
                *           ERASE CHAR KEY GIVES BACKSPACE              8A400230
                *           NUMERIC T GIVES A LINE FEED                 8A400235
                *                                                       8A400240
                *           A CARRIER RETURN COMMAND IS GIVEN           8A400250
                *           * NO CHAR WAS FOUND IN TABLE (ERROR)        8A400260
                *                                                       8A400270
                *           CE SW SETTINGS                              8A400280
                *                                                       8A400290
                *           00001111   CE SERVICE STOP                  8A400300
                *           11111111   TERMINATE RUN                    8A400310
                *                                                       8A400320
                *           ALL OTHER COMBINATIONS INVALID              8A400330
                *                                                       8A400340
                *                                                       8A400350
                * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION      8A400360
                * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.            8A400370
                ************************************************        8A400380
                *                                                       8A400390
                *           AUX PROG ENTRY POINTS                       8A400400
                *           *********************                       8A400410
                *                                                       8A400420
                *           1ST PASS ENTRY                              8A400430
                *                                                       8A400440
                * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN     8A400450
                * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER          8A400460
                *                                                       8A400470
0036 0  1000        NOP                 NO OPERATION                    8A400480
0037 0  1000        NOP                 NO OPERATION                    8A400490
0038 0  1000        NOP                 NO OPERATION                    8A400500
0039 0  1000        NOP                 NO OPERATION                    8A400510
003A 0  1000        NOP                 NO OPERATION                    8A400520
003B 0  1000        NOP                 NO OPERATION                    8A400530
003C 0  C029        LD      HNTPR       RESTORE LOC NICE                8A400540
003D 0  D0F7        STO     /35         * IN AUX LOADER                 8A400550
                *                                                       8A400560
003E 0  C023        LD      CEON        PLACE BRANCH                    8A400570
003F 0  D0C4        STO     /04         * TO RETUR LABEL                8A400580
                ************************************************        8A400590
                *                                                       8A400600
                *           ADD AREA CODE TO THE I/O COMMANDS           8A400610
                *                                                       8A400620
0040 0  6108        LDX   1 11                                          8A400630
0041 0  C160    BUILD LD    1 CEOFF     GET IOCC WORD AND               8A400640
0042 0  E82C        OR      AREA        * OR IN AREA AND                8A400650
0043 0  D160        STO   1 CEOFF       * PLACE BACK                    8A400660
```



```
0044 0  71FE        MDX   1 -2                                          8A400670
0045 0  70FB        MDX     BUILD                                       8A400680
                *                                                       8A400690
                *           ALL BUT 1ST PASS ENTRY POINT                8A400700
                *                                                       8A400710
0046 0  0818    RETUR XIO     CEON                                      8A400720
0047 0  6A2F        STX   2 SAVE2+1                                     8A400730
0048 0  0815        XIO     SENSI       SENSE CE SW TO ACCUM            8A400740
0049 0  E014        AND     SENBI       BLOCK OUT PROG SEL SW           8A400750
004A 0  F013        EOR     SENBI                                       8A400760
004B 00 4C180070    BSC   L NOTRD,-     BR OUT OF PROGRAM               8A400770
                *                                                       8A400780
004D 0  F020        EOR     GONE                                        8A400790
004E 00 4C180074    BSC   L IMM,-       BR CE SERVICE STOP              8A400800
                *                                                       8A400810
0050 0  0813        XIO     DSW         SENSE DEVICE STATUS             8A400820
0051 00 4C280093    BSC   L HARES,+Z     BR T/W RESP INT                 8A400830
                *                                                       8A400840
0053 0  1001        SLA     1                                           8A400850
0054 00 4C280079    BSC   L HBRES,+Z     KB RESPONSE INT                 8A400860
                *                                                       8A400870
0056 0  1001        SLA     1                                           8A400880
0057 00 4C280093    BSC   L HARES,+Z     MANUAL REQU INT                 8A400890
                *                                                       8A400900
0059 0  1000    HERE NOP                OR MDX TO SAVE2                 8A400910
                *                                                       8A400920
                *           1ST PASS ONLY                               8A400930
                *                                                       8A400940
005A 0  C002        LD      NOT                                         8A400950
005B 0  D0FD        STO     HERE        PLACE BR TO SAVE2               8A400960
005C 0  7036        MDX     HARES                                       8A400970
005D 0  701C    NOT MDX   X SAVE2-HERE-1  BUILT INSTRUCTION            8A400980
                ************************************************        8A400990
                *                                                       8A401000
                *           CONSTANTS AND/OR IOCC WORDS                 8A401010
                *                                                       8A401020
005E    0000        BSS   E 0                                           8A401030
005E 0  00FF    SENBI DC      /00FF     END COMMAND COMPARE             8A401040
005F 0  0760        DC      /0760       SENSE CE SWITCHES               8A401050
0060 0  0000    CEOFF DC      /0000                                     8A401060
0061 0  0002        DC      /0002       CE OFF IOCC                     8A401070
0062 0  7041    CEON  DC      TTTT                                      8A401080
0063 0  0003        DC      /0C03       CE ON IOCC                      8A401090
0064 0  0000    DSW   DC      /0000                                     8A401100
0065 0  0703        DC      /0703       KEY / TYP DSW                   8A401110
0066 0  70D7    HNTPR DC      NNNN                                      8A401120
0067 0  0402        DC      /0402       IOCC CONTROL CODE               8A401130
0068 0  006D    HEAD  DC      HEADC                                     8A401140
0069 0  0202        DC      /0202       IOCC READ CODE                  8A401150
006A 0  006C    HYOU  DC      HYOUT                                     8A401160
006B 0  0102        DC      /0102       IOCC TYPE CODE                  8A401170
006C 0  0000    HYOUT DC      /0000     CHAR TO TYPEWRITER              8A401180
006D 0  0000    HEADC DC      /0C0C     CHAR FROM KEYBOARD              8A401190
006E 0  00F0    GONE  DC      /00F0     CONSTANT                        8A401200
006F 0  0800    AREA  DC      /0800     1ST 1816 AREA CODE              8A401210
                *                       * CHANGE THIS VALUE FOR         8A401220
                *                       * A 1816  ON ANOTHER AREA       8A401230
                ************************************************        8A401240
                *                                                       8A401250
                *           EXIT POINTS TO AUX LOADER                   8A401260
                *           *************************                   8A401270
                *                                                       8A401280
                *           TERMINATE EXIT POINT                        8A401290
                *                                                       8A401300
0070 00 65000813    NOTRD LDX   L1 WWW                                  8A401310
0072 0  6991        STX     1 /04                                       8A401320
0073 0  08EC        XIO     CEOFF                                       8A401330
                *                                                       8A401340
```

```
                    *           CE SERVICE STOP EXIT POINT                  8A401350
                    *                                                       8A401360
0074 0  08F3        IMM   XIO     HEAD       TURN OFF PROCEED               8A401370
0075 0  08EE              XIO     DSW                                       8A401380
                    *                                                       8A401390
                    *           NORMAL EXIT POINT                           8A401400
                    *                                                       8A401410
0076 00 66000000    SAVE2 LDX   L2 /0000                                    8A401420
0078 0  7094              MDX     QQQQ       EXIT TO AUX LOADER             8A401430
                    ************************************************        8A401440
                    *                                                       8A401450
                    *                                                       8A401460
0079 0  08EE        HBRES XIO     HEAD       READ CHARACTER                 8A401470
007A 0  6143              LDX   1 67                                        8A401480
007B 00 C5000095    HEARC LD    L1 HBTAB                                    8A401490
007D 0  F0EF              EOR     HEADC                                     8A401500
007E 00 4C180084          BSC   L HOMPA,+-   CHAR COMPARE BRANCH            8A401510
0080 0  71FF              MDX   1 -1         JUMP IF XR1 GOES TO 0          8A401520
0081 0  70F9              MDX     HEARC                                     8A401530
                    *                                                       8A401540
                    *           CHARACTER NOT FOUND IN TABLE                8A401550
                    *                                                       8A401560
0082 0  C056              LD      HAB53      LOAD ERROR CHAR                8A401570
0083 0  700C              MDX     HOMP                                      8A401580
                    *                                                       8A401590
                    *                                                       8A401600
0084 0  6907        HOMPA STX   1 HOS+1                                     8A401610
0085 0  C006              LD      HOS+1                                     8A401620
0086 0  6200              LDX   2 0                                         8A401630
0087 0  4804              BSC     E                                         8A401640
0088 0  6208              LDX   2 8                                         8A401650
0089 0  1881              SRT     1                                         8A401660
008A 0  D001              STO     HOS+1                                     8A401670
0088 00 65000000    HOS   LDX   L1 /0000                                    8A401680
008D 00 C5000009          LD    L1 HAB53                                    8A401690
008F 0  1200              SLA   2 0          SHIFT LEFT 0 OR 8              8A401700
0090 0  D0D8        HOMP  STO     HYOUT                                     8A401710
0091 0  08D8              XIO     HYOU                                      8A401720
0092 0  70E3              MDX     SAVE2                                     8A401730
                    ************************************************        8A401740
                    *                                                       8A401750
0093 0  08D2        HARES XIO     HNTPR      TURN ON PROCEED                8A401760
0094 0  70E1              MDX     SAVE2                                     8A401770
                    ************************************************        8A401780
                    *                                                       8A401790
                    *                                                       8A401800
0095 0  0500        HBTAB DC      /0500      END OF FIELD CHAR              8A401810
0096 0  9000              DC      /9C00      A                              8A401820
0097 0  8800              DC      /8800      B                              8A401830
0098 0  8400              DC      /8400      C                              8A401840
0099 0  8200              DC      /8200      D                              8A401850
009A 0  8100              DC      /8100      E                              8A401860
009B 0  8080              DC      /8080      F                              8A401870
009C 0  8040              DC      /8040      G                              8A401880
009D 0  8020              DC      /8020      H                              8A401890
009E 0  8010              DC      /8010      I                              8A401900
009F 0  5000              DC      /5000      J                              8A401910
00A0 0  4800              DC      /4800      K                              8A401920
00A1 0  4400              DC      /4400      L                              8A401930
00A2 0  4200              DC      /4200      M                              8A401940
00A3 0  4100              DC      /4100      N                              8A401950
00A4 0  4080              DC      /4080      O                              8A401960
00A5 0  4040              DC      /4040      P                              8A401970
00A6 0  4020              DC      /4020      Q                              8A401980
00A7 0  4010              DC      /4010      R                              8A401990
00A8 0  2800              DC      /2800      S                              8A402000
00A9 0  2400              DC      /2400      T                              8A402010
00AA 0  2200              DC      /2200      U                              8A402020
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00AB 0  2100              DC      /2100      V                              8A402030
00AC 0  2080              DC      /2080      W                              8A402040
00AD 0  2040              DC      /2040      X                              8A402050
00AE 0  2020              DC      /2020      Y                              8A402060
00AF 0  2010              DC      /2010      Z                              8A402070
00B0 0  0000              DC      /0000      SPACE                          8A402080
00B1 0  4220              DC      /4220      *                              8A402090
00B2 0  3000              DC      /3000      /                              8A402100
00B3 0  2000              DC      /2000      0                              8A402110
00B4 0  1000              DC      /1000      1                              8A402120
00B5 0  0800              DC      /0800      2                              8A402130
00B6 0  0400              DC      /0400      3                              8A402140
00B7 0  0200              DC      /0200      4                              8A402150
00B8 0  0100              DC      /0100      5                              8A402160
00B9 0  0080              DC      /0080      6                              8A402170
00BA 0  0040              DC      /0040      7                              8A402180
00BB 0  0020              DC      /0020      8                              8A402190
00BC 0  0010              DC      /0010      9                              8A4C2200
00BD 0  4420              DC      /4420      $                              8A402210
00BE 0  8420              DC      /8420      .                              8A402220
00BF 0  2420              DC      /2420      ,                              8A402230
00C0 0  0008              DC      /0008      END OF FIELD                   8A402240
00C1 0  0004              DC      /0004      ERASE CHARACTER                8A402250
00C2 0  0002              DC      /0002      ERASE FIELD                    8A402260
00C3 0  00A0              DC      /00A0      =                              8A402270
00C4 0  0120              DC      /0120      '                              8A4C2280
00C5 0  8120              DC      /8120      (                              8A402290
00C6 0  4120              DC      /4120      )                              8A402300
00C7 0  80A0              DC      /80A0      +                              8A402310
00C8 0  4000              DC      /4000      MINUS SIGN                     8A402320
00C9 0  8820              DC      /8820      CENT SIGN                      8A402330
00CA 0  8220              DC      /8220      LESS THAN                      8A402340
00CB 0  8060              DC      /8060      VERTICAL BAR                   8A402350
00CC 0  8000              DC      /8000      AMPERSAND                      8A402360
00CD 0  4820              DC      /4820      EXCLAIMATION                   8A402370
00CE 0  40A0              DC      /40A0      SEMICOLON                      8A402380
00CF 0  4060              DC      /4060      CORNER SIGN RT UPPER           8A402390
00D0 0  2220              DC      /2220      PERCENT                        8A402400
00D1 0  2120              DC      /2120      UNDERSCORE                     8A402410
00D2 0  20A0              DC      /20A0      GREATER THAN                   8A402420
00D3 0  2060              DC      /2060      QUESTION MARK                  8A402430
00D4 0  0820              DC      /0820      COLON                          8A402440
00D5 0  0420              DC      /0420      NUMBER SIGN                    8A4C2450
00D6 0  0220              DC      /0220      AT SIGN                        8A402460
00D7 0  0060              DC      /0060      QUOTE MARKS                    8A402470
00D8 0  2820              DC      /2820      LINE FEED                      8A402475
00D9 0  813E        HAB53 DC      /813E      CR RETURN, A                   8A402480
00DA 0  1A1E              DC      /1A1E      B, C                           8A402490
00DB 0  3236              DC      /3236      D, E                           8A402500
00DC 0  1216              DC      /1216      F, G                           8A402510
00DD 0  2622              DC      /2622      H, I                           8A402520
00DE 0  7E5A              DC      /7E5A      J, K                           8A402530
00DF 0  5E72              DC      /5E72      L, M                           8A402540
00E0 0  7652              DC      /7652      N, O                           8A402550
00E1 0  5666              DC      /5666      P, Q                           8A402560
00E2 0  629A              DC      /629A      R, S                           8A402570
00E3 0  9EB2              DC      /9EB2      T, U                           8A402580
00E4 0  B692              DC      /B692      V, W                           8A402590
00E5 0  96A6              DC      /96A6      X, Y                           8A4026C0
00E6 0  A221              DC      /A221      Z, SPACE                       8A402610
00E7 0  D6BC              DC      /D6BC      *, /                           8A402620
00E8 0  C4FC              DC      /C4FC      0, 1                           8A402630
00E9 0  D8DC              DC      /D8DC      2, 3                           8A402640
00EA 0  F0F4              DC      /F0F4      4, 5                           8A402650
00EB 0  D0D4              DC      /D0D4      6, 7                           8A402660
00EC 0  E4E0              DC      /E4E0      8, 9                           8A402670
00ED 0  4000              DC      /4000      $, .                           8A402680
00EE 0  8005              DC      /8005      ,, EOF- SHIFT TO BLK           8A402690
```

```
00EF 0  1109            DC      /1109     BKSP,SHIFT TO RED              8A402700
00F0 0  C2E6            DC      /C2E6     EQUALS, APOSTROPHE             8A402710
00F1 0  FEF6            DC      /FEF6     (, )                           8A402720
00F2 0  DA84            DC      /DA84     PLUS, MINUS                    8A402730
00F3 0  02DE            DC      /02DE     CENT, LESS THAN                8A402740
00F4 0  C644            DC      /C644     VERTICAL BAR, AMPERSAND        8A402750
00F5 0  42D2            DC      /42D2     EXCLAIM, SEMICOLON             8A402760
00F6 0  F206            DC      /F206     CORNER, PERCENT                8A402770
00F7 0  BE46            DC      /BE46     UNDERSCORE, GREAT THAN         8A402780
00F8 0  8682            DC      /8682     QUESTION, COLON                8A402790
00F9 0  CC04            DC      /CC04     NUMBER, AT                     8A402800
00FA 0  E203            DC      /E203     QUOTES, LINE FEED              8A402810
                                                                         8A402820
                *                                                        8A402830
000D            QQQQ    EQU     /D        GO TO LOADER AT /D             8A402840
70D7            NNNN    EQU     /70D7     FOR CARD LOADER AT /35         8A402850
0813            WWWW    EQU     /0813     SET IN LOADER AT /04           8A402860
7041            TTTT    EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO     8A402870
                *                           THE BRANCH FROM THE LOADER   8A402880
                *                           TO RETUR IN THIS PROGRAM.    8A402890
                ********************************************           8A402900
00FC    00FA            END     *-1       END CARD NEVER USED
```


CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	006F	0042
BUILD	0041	0045
CEOFF	0060	0041,0043,0073
CEON	0062	003E,0C46
DSW	0064	0050,0C75
GONE	006E	004D
HAB53	0009	0082,0C8D
HARES	0093	0051,0C57,005C
HBRES	0079	0054
HBTAB	0095	0078
HEAD	0068	0074,0C79
HEADC	006D	0068,007D
HEARC	0078	0081
HERE	0059	005B,0C5D
HNTPR	0066	003C,0C93
HOMP	0090	0083
HOMPA	0084	007E
HOS	008B	0084,0C85,008A
HYOU	006A	0091
HYOUT	006C	006A,0090
IMM	0074	004E
NNNN	70D7	0066
NOT	005D	005A
NOTRD	0070	004B
QQQQ	000D	0078
RETUR	0046	00FB
SAVE2	0076	0047,0C5D,0092,0094
SENBI	005E	0048,0C49,004A
TTTT	7041	0062
WWWW	0813	0070

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1. PURPOSE

THERE ARE FOUR AUX 1053 EXERCISER PROGRAMS, ONE FOR EACH POSSIBLE 1053 ON THE 1800 SYSTEM. THE ONLY DIFFERENCES AMONG THE FOUR PROGRAMS ARE THE IOCC MODIFIER BITS. EACH PROGRAM TESTS THE MECHANICAL PERFORMANCE OF ITS RESPECTIVE 1053 BY CAUSING THE 1053 TO PRINT A PRE-PROGRAMED TEST PATTERN. IN ADDITION, THE PROGRAM OPERATOR CAN USE THE CE PROGRAM SWITCHES PRINT ANY DESIRED CHARACTER OR EXECUTE ANY CONTROL FUNCTION (E.G., SPACE, TAB, ETC.).

2. PREREQUISITES

2.1 DEVICE AREA CODE

IF THE DEVICE TO BE TESTED USES A CUSTOMER ASSIGNED AREA CODE, A NEW AUX PROGRAM DECK OR PAPER TAPE MUST BE CREATED. THE PROCEDURE IS PRESENTED IN THE DOCUMENTATION OF THE AUX PROGRAM GENERATOR UTILITY (PID 08AC - CARD VERSION, PID 08AD - PAPER TAPE VERSION) THE PROGRAM LOCATIONS THAT MUST BE ALTERED ARE SPECIFIED BY A STATEMENT AT THE BEGINNING OF THE PROGRAM LISTING.

2.2 CARD INPUT

THE CARD DECK SUPPLIED WITH THIS DOCUMENT CONTAINS FOUR OBJECT DECKS. EACH OBJECT DECK CONTAINS SEVEN CARDS AND IS FOLLOWED BY A BLANK CARD. UPON RECEIPT, SEPARATE AND IDENTIFY THE DECKS AS FOLLOWS-

A. STARTING AT THE FRONT OF THE 32-CARD DECK, REMOVE THE FIRST EIGHT CARDS FROM THE 32-CARD DECK, PLACE A RUBBER BAND AROUND THE EIGHT CARDS, AND IDENTIFY THE EIGHT-CARD DECK AS FOLLOWS- AUX 1ST 1053 EXERCISER PROG.

B. SEPARATE AND IDENTIFY THE REMAINING THREE DECKS. THE NAMES OF THE REMAINING DECKS ACCORDING TO THEIR ORDER IN THE 32-CARD DECK ARE AS FOLLOWS-

1. AUX 2ND 1053 EXERCISER PROG.
2. AUX 3RD 1053 EXERCISER PROG.
3. AUX 4TH 1053 EXERCISER PROG.

THE AUX DIAGNOSTIC LOADER (PID 08A1) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PROGRAM DECK CAN BE LOADED.

2.3 PAPER TAPE INPUT

THE AUX DIAGNOSTIC LOADER (PAPER TAPE - PID 08A0) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PAPER TAPE PROGRAM CAN BE LOADED.

3. USE PROCEDURES

BEFORE PROCEEDING, A PROGRAM MUST BE IN MAIN-CORE STORAGE RUNNING OR AT A WAIT INSTRUCTION READY TO START RUNNING.

3.1 CARD INPUT LOADING PROCEDURE

A. BE SURE THE 1442 IS AVAILABLE AND ALL CARDS ARE REMOVED.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT TWO TIMES TO ASSURE THE 1442 IS IN CE MODE.
D. PLACE THE SEVEN CARDS OF THE AUX 1053 EXERCISER PROGRAM IN THE HOPPER OF THE 1442 AND FOLLOW WITH A BLANK CARD.

NOTE

EACH PROGRAM CARD HAS A CHARACTER ENTERED INTO COLUMN 80. THIS CHARACTER DEFINES THE CARD'S POSITION IN THE DECK ACCORDING TO THE FOLLOWING SEQUENCE, X(FIRST), THEN 0, 1, 2, 3, 4, AND 5. THE CARDS CANNOT BE READ UNLESS THEY ARE PLACED IN THE HOPPER IN THE CORRECT ORDER.

E. DEPRESS THE 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
F. SELECT THE DESIRED ROUTINE FROM TABLE 1.
G. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO LOAD THE PROGRAM. (IF THE HOPPER OF THE 1442 DOES NOT GO EMPTY THE CHECK-SUM ROUTINE IN THE AUX DIAGNOSTIC LOADER MOST LIKELY REJECTED THE PROGRAM. CHECK THE CARDS FOR PROPER SEQUENCE AND RETURN TO STEP A AND TRY AGAIN).
H. GO TO SECTION 3.3

3.2 PAPER TAPE INPUT LOADING PROCEDURE

A. BE SURE THAT THE 1054 TAPE READER IS AVAILABLE AND THAT THERE IS NO TAPE IN THE READER.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT PUSHBUTTON TWO TIMES TO ASSURE THAT THE 1054 IS PLACED IN CE MODE.
D. PLACE THE FIRST TAPE CHARACTER OF THE PROGRAM DIRECTLY ABOVE THE SENSE PINS IN THE 1054 READER. (THE CHECK-SUM ROUTINE OF THE AUX DIAGNOSTIC LOADER WILL REJECT THE PROGRAM IF THE AUX TAPE IS LOADED INCORRECTLY).
E. SELECT THE DESIRED ROUTINE FROM TABLE 1.
F. DEPRESS CE LEVEL INTERRUPT TO LOAD THE PROGRAM. TAPE ACTION SHOULD START AND CONTINUE UNTIL THE ENTIRE AUX PROGRAM HAS BEEN READ. WHEN THE READER STOPS, THE FIRST TAPE FEED HOLE CHARACTER FOLLOWING THE AUX PROGRAM DATA SHOULD BE LOCATED DIRECTLY ABOVE THE 1054 SENSE PINS FOR A CORRECTLY STORED PROGRAM. IF THE TAPE DID NOT STOP AT SAID LOCATION, RETURN TO STEP A TO RELOAD PROG.

3.3 TYPICAL PROGRAM OPERATING PROCEDURE

A. SELECT ADDITIONAL ROUTINES AS DESIRED FROM TABLE 1.
B. TO RELEASE THE DEVICE TO THE CUSTOMER PROCEED TO SECTION 3.5

TABLE 1. CE PROGRAM SWITCH SETTINGS

ROUTINE	SWITCHES 8 9 10 11 12 13 14 15	FUNCTION
NORMAL PRINT PATTERN	0 0 0 0 0 0 0 1	THIS SWITCH SETTING INITIATES A ROUTINE THAT EXERCISES THE 1053. ALL POSSIBLE CHARACTERS ARE PRINTED, AND ALL POSIBLE CONTROL FUNCTION ARE EXECUTED.
ALTERNATE PRINT PATTERN	0 0 0 0 1 1 0 1	THIS SWITCH SETTING INITIATES A ROUTINE THAT IS THE SAME AS THE NORMAL PRINT-PATTERN ROUTINE EXCEPT A SHIFT-TO-RED OR SHIFT-TO-BLACK COMMAND IS EXECUTED BETWEEN EACH PRINT-CHARACTER OR EXECUTE-CONTROL-FUNCTION COMMAND.
CE SERVICE STOP	0 0 0 0 1 1 1 1	THIS SWITCH SETTING CAUSES THE 1053 PROGRAM TO STOP BUT DOES NOT TERMINATE THE PROGRAM. IT IS RECOMMENDED TO USE THIS SETTING WHEN ADJUSTING THIS DEVICE. TO START THE ROUTINE, SELECT THE CE PROGRAM SWITCH SETTINGS AND DEPRESS CE INTERRUPT PUSHBUTTON.
PROGRAM TERMINATOR	1 1 1 1 1 1 1 1	THIS SWITCH SETTING INITIATES A ROUTINE THAT TERMINATES THE 1053 PROGRAM. (ALL AUX PROGRAMS USE THE SAME PROGRAM-TERMINATOR SETTING.
	** CAUTION **	FOLLOW THE TERMINATING PROCEDURE IN SECTION 3.5
SELECT CHARACTER OR CONTROL FUNCTION	REFER TO TABLE 2 FOR CHARACTER AND CONTROL FUNCTION CODES.	THIS ROUTINE ALLOWS THE PROGRAM OPERATOR TO USE THE CE PROG. SWITCHES TO SELECT A CHARACTER FOR PRINTING OR A CONTROL FUNCTION FOR EXECUTION.

TABLE 2. CHARACTER AND CONTROL-FUNCTION CODES
(USING TYPING ELEMENT P/N 1167769)

	LC	UC
A	3C	3E
B	18	1A
C	1C	1E
D	30	32
E	34	36
F	10	12
G	14	16
H	24	26
I	20	22
J	7C	7E
K	58	5A
L	5C	5E
M	70	72
N	74	76
O	50	52
P	54	56
Q	64	66
R	60	62
S	98	9A
T	9C	9E
U	80	B2
V	B4	B6
W	90	92
X	94	96
Y	A4	A6
Z	A0	A2

0	C4
1	FC
2	D8
3	DC
4	F0
5	F4
6	D0
7	D4
8	E4
9	E0
/	BC
-	84
,	80
$	40
.	00
(	FE
)	F6
*	D6
+	DA
=	C2
'	E6

SPACE	21
CAR RETURN	81
TABULATE	41
BACKSPACE	11
SHIFT TO RED	09
SHIFT TO BLK	05
LINE FEED	03
EXCLAIMATION	42
QUOTE MARKS	E2
NUMBER SIGN	C0
AT SIGN	04
QUESTION	86
COLON	82
UNDERSCORE	BE
GREATER THAN	46
LOGICAL NOT	F2
PERCENT	06
SEMICOLON	D2
VERTICAL BAR	C6
AMPERSAND	44
CENT	02
LESS THAN	DE

3.4 CE SERVICE STOP

THE CE SERVICE STOP ROUTINE STOPS THE 1053 PROGRAM BUT DOES NOT TERMINATE THE PROGRAM. IT IS RECOMMENDED TO USE THIS STOP WHEN MAKING ADJUSTMENTS.

3.5 TERMINATING PROCEDURE

TO TERMINATE THE PROGRAM AND RETURN THE DEVICE TO THE CUSTOMER-

A. SET THE CE PROGRAM SWITCHES TO 00001111 -CE SERVICE STOP. (THE ONLY REASON FOR USING THIS SETTING IS TO STOP ANY DEVICE ACTION WHICH MAY CAUSE AN INTERRUPT).
B. SET THE CE PROGRAM SWITCHES TO 11111111 -TERMINATOR SETTING, AND DEPRESS THE CE INTERRUPT LEVEL PUSHBUTTON ONCE AND ONLY ONCE. (A SECOND DEPRESSION OF THE CE INT. PUSHBUTTON WILL RESULT IN THE AUX DIAGNOSTIC LOADER TRYING TO LOAD A NEW PROGRAM IF THE READER IS READY).

NOTE

TO OFFSET THE POSSIBILITY THAT THE INPUT DEVICE MIGHT BE MALFUNCTIONING THE NEXT TIME THE 1800 SYSTEM NEEDS SERVICING THE FOLLOWING PROGRAM SHOULD BE LOADED INTO AUX CORE AT THE CONCLUSION OF EACH SERVICE CALL -

A. CARD INPUT

LOAD THE AUX 1442 PACKED READ EXERCISE PROGRAM (PID 08AA) AFTER ASSURING THE PROGRAM IS BY PUNCHING CARDS, CE SWITCH SETTING 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING, TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

B. TAPE INPUT

LOAD THE AUX 1054/55 EXERCISE PROGRAM (PID 08A8). AFTER ASSURING THE PROGRAM IS IN BY PUNCHING TAPE, CE SWITCH SETTINGS 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

4. PRINTOUTS

ALL FOUR 1053 PROGRAMS PRODUCE THE SAME PRE-PROGRAMED PRINTOUT (FIGURE 1). IN ADDITION, THE PROGRAM OPERATOR CAN USE THE CE PROGRAM SWITCHES TO PRINT ANY CHARACTER OR EXECUTE ANY CONTROL FUNCTION THAT HE DESIRED. ALL ALPHABETICAL CHARACTERS ARE PRINTED IN UPPER CASE.

5. COMMENTS

A PROGRAM MUST BE IN MAIN-CORE STORAGE AND MUST BE RUNNING OR READY TO START BEFORE A 1053 PROGRAM CAN BE LOADED. ASSUMING THAT THE AUX DIAGNOSTIC LOADER IS PRESENT IN AUXILIARY-STORAGE AND THE PROGRAM IS IN THE READER AND READY TO BE READ, DEPRESSING THE CE LEVEL INTERRUPT KEY CAUSES THE PROGRAM TO BE STORED AND STARTED.

UPON BEING ENTERED, THE 1053 PROGRAM TURNS ON THE CE MODE, CLEARS THE DSW, AND SENSES THE CE PROGRAM SWITCHES. IF THE PROGRAM SENSES A PROGRAM TERMINATOR (11111111) IT SETS A BRANCH ADDRESS IN THE LOADER TO TERMINATE THE 1053 PROGRAM AND TURNS OFF THE CE MODE. CONTROL IS THEN RETURNED TO THE CUSTOMER S MAIN-LINE PROGRAM. IF THE 1053 PROGRAM DOES NOT SENSE A PROGRAM TERMINATOR, THE PROGRAM EXECUTES ONE OF THE ROUTINES DISCUSSED IN THE FOLLOWING PARAGRAPHS.

5.1 NORMAL PRINT-PATTERN ROUTINE

THE NORMAL PRINT-PATTERN ROUTINE EXERCISES THE 1053. ALL POSSIBLE CHARACTERS ARE PRINTED AND ALL POSSIBLE CONTROL FUNCTIONS ARE EXECUTED. CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM AFTER EACH CHARACTER IS PRINTED OR CONTROL FUNCTION IS EXECUTED.

5.2 ALTERNATE PRINT-PATTERN ROUTINE

THE ALTERNATE PRINT-PATTERN ROUTINE EXERCISES THE 1053 AS DESCRIBED IN PARAGRAPH 5.1 BUT ADDS A SHIFT-TO-RED OR SHIFT-TO-BLACK COMMAND BETWEEN EACH PRINT-CHARACTER OR EXECUTE-CONTROL-FUNCTION COMMAND. CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM AFTER EACH CHARACTER IS PRINTED OR CONTROL FUNCTION IS EXECUTED.

5.3 SELECT-CHARACTER-OR-CONTROL-FUNCTION ROUTINE

THE SELECT-CHARACTER-OR-CONTROL-FUNCTION ROUTINE ALLOWS THE PROGRAM OPERATOR TO USE THE CE PROGRAM SWITCHES TO SELECT A CHARACTER FOR PRINTING OR A CONTROL FUNCTION FOR EXECUTION. CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM AFTER EACH CHARACTER IS PRINTED OR CONTROL FUNCTION IS EXECUTED.

6. APPENDIX


```
AABBCCDDEEFFGGHHIIJJKKLLMMNNOOPPQQRRSSTTUUVVWWXXYYZZ1(2+3<4¬5)6;7*8'9"0|#=/_-?,:
AABBCCDDEEFFGGHHIIJJKKLLMMNNOOPPQQRRSSTTUUVVWWXXYYZZ1(2+3<4¬5)6;7*8'9"0|#=/_-?,:
LINE FEED
LINE FEED
TAB                    &>$!@%.¢
TAB                    &>$!@%.¢
                       BACK S P A C E INDEX
                                      INDEX
                       BACK S P A C E INDEX
                                      INDEX
```

FIGURE 1
SAMPLE OUTPUT OF AUX 1053

F
L

AUX 1053 EXERCISER
1ST CHAR AND CTRL EXERCISER

```
                        ABS                                          8A400000
028C                    ORG     /36                                  8A400010
                    ************************************************ 8A400020
                    *                                                8A400030
                    *       IF THIS PROG IS TO BE USED FOR A MACHINE 8A400040
                    * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH 8A400050
                    * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST 8A400060
                    * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A 8A400070
                    * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG 8A400080
                    * GENERATOR WRITE-UP FOR PROCEDURE.             8A400090
                    *                                              8A400100
                    ************************************************ 8A400110
                    *                                              8A400120
                    *                                              8A400130
                    *                                              8A400140
                    *       1ST 1053 TYPEWRITER DIAGNOSTIC PROG    8A400150
                    *       ***********************************    8A400160
                    *                                              8A400170
                    * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE 8A400180
                    *                                              8A400190
                    *           CE BIT SW SETTINGS                 8A400200
                    *                                              8A400210
                    *           00000001  NORMAL PRINT PATTERN     8A400220
                    *           00001101  NORMAL PRINT PATTERN     8A400230
                    *                     * WITH ALTERNATE COLOR   8A400240
                    *           00001111   CE SERVICE STOP         8A400250
                    *           11111111  PROGRAM TERMINATOR       8A400260
                    *                                              8A400270
                    *           ALL OTHER CE BIT SW COMBINATIONS   8A400280
                    *           * WILL ACT AS CHAR OR CONTROL      8A400290
                    *           * COMMANDS. SEE REFERENCE MANUALS  8A400300
                    *           * FOR CHARACTER AND CONTROL CODE   8A400310
                    *           * BIT STRUCTURE                    8A400320
                    *                                              8A400330
                    *           OTHER OPERATING INSTRUCTIONS       8A400340
                    *                                              8A400350
                    *              CLEAR ALL TAB SETTINGS AND      8A400360
                    *              * PLACE A NEW TAB STOP AT       8A400370
                    *              * ABOUT 40                      8A400380
                    *                                              8A400390
                    *              SET MARGINS AT 10 AND 90 TO     8A400400
                    *              * ALLOW EXACTLY 80 PRINT POS    8A400410
                    *                                              8A400420
                    * THIS PROGRAM WAS WRITTEN TO BE OPERATED WITH 8A400430
                    * * AN UPPER CASE/ UPPER CASE TYPE ELEMENT     8A400440
                    * * PART NO. 1167969                           8A400450
                    *                                              8A400460
                    * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION 8A400470
                    * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.   8A400480
                    ************************************************ 8A400490
                    *                                              8A400500
                    *           AUX PROG ENTRY POINTS              8A400510
                    *           *********************              8A400520
                    *                                              8A400530
                    *           1ST PASS ENTRY                     8A400540
                    *                                              8A400550
                    * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN 8A40056C
                    * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER 8A400570
                    *                                              8A400580
0036 0  1000            NOP             NO OPERATION             8A400590
0037 0  1000            NOP             NO OPERATION             8A400600
0038 0  1000            NOP             NO OPERATION             8A400610
0039 0  1000            NOP             NO OPERATION             8A400620
003A 0  1000            NOP             NO OPERATION             8A400630
003B 00 65007007        LDX   L1 NNNN   RESTORE LOCATION NICE     8A400640
003D 0  69F7            STX    1 /35    * IN AUX LOADER          8A400650
                    *                                            8A400660
003E 0  C033            LD      DSW     PLACE BRANCH             8A400670
```


AUX 1053 EXERCISER
1ST CHAR AND CTRL EXERCISER

```
003F 0  D0C4            STO     /04     * TO RETUR LABEL         8A400680
                    ************************************************ 8A400690
                    *                                              8A400700
                    *           ADD AREA CODE TO THE I/O COMMANDS   8A400710
                    *                                              8A400720
0040 0  6107            LDX   1 7                                  8A400730
0041 0  C16E    BUILD   LD    1 CEOFF   GET IOCC WORD AND          8A400740
0042 0  E839            OR      AREA    * OR IN AREA AND           8A400750
0043 0  D16E            STO   1 CEOFF   * PLACE BACK               8A400760
0044 0  71FE            MDX   1 -2                                 8A400770
0045 0  70FB            MDX     BUILD                              8A400780
                    *                                              8A400790
                    *           ALL BUT 1ST PASS ENTRY POINT       8A400800
                    *                                              8A400810
0046 0  0829    RETUR   XIO     CEON    SET CE MODE                8A400820
0047 0  6A21            STX   2 SAVE2+1                            8A400830
0048 0  0829            XIO     DSW     SENSE DEVICE STATUS        8A400840
0049 0  0822            XIO     SENBI   SENSE CE SW TO ACCUM       8A400850
004A 0  1008            SLA     8                                  8A400860
004B 0  D02D            STO     AID                                8A400870
004C 0  F01F            EOR     SENBI                              8A400880
004D 00 4C180064        BSC   L NOTRD,+-  BR SW TERMINATE           8A400890
                    *                                              8A400900
004F 0  F020            EOR     CEON                               8A400910
0050 00 4C180068        BSC   L SAVE2,+-    BR CE SERVICE STOP     8A400920
                    *                                              8A400930
0052 0  F025            EOR     CALL                               8A400940
0053 00 4C18007D        BSC   L NORMA,+-  BR TO NORMAL ROUTINE     8A400950
                    *                                              8A400960
0055 0  F018            EOR     CEOFF                              8A400970
0056 00 4C18005A        BSC   L LUMP,+-   BR TO SHIFT NORMAL       8A400980
                    *                                              8A400990
                    ************************************************ 8A401000
                    *                                              8A401010
0058 0  081B    EXIT    XIO     XIOA    TYPE CHARACTER             8A401020
0059 0  700E            MDX     SAVE2                              8A401030
                    ************************************************ 8A401040
                    *                                              8A401050
                    *           RED / BLACK ALTERNATE ROUTINE      8A401060
                    *                                              8A401070
005A 0  C010    LUMP    LD      TEMPQ                              8A401080
005B 0  F015            EOR     CEON+1                             8A401090
005C 0  D00E            STO     TEMPQ                              8A401100
005D 00 4C04007D        BSC   L NORMA,E                            8A401110
005F 0  C816            LDD     REDBK                              8A401120
0060 0  D018            STO     AID                                8A401130
0061 0  18D0            RTE     16                                 8A401140
0062 0  D813            STD     REDBK                              8A401150
0063 0  70F4            MDX     EXIT                               8A401160
                    ************************************************ 8A401170
                    *                                              8A401180
                    *           EXIT POINTS TO AUX LOADER          8A401190
                    *           ************************           8A401200
                    *                                              8A401210
                    *           TERMINATE EXIT POINT               8A401220
                    *                                              8A401230
0064 00 66000813    NOTRD   LDX   L2 WWWW                          8A401240
0066 0  6A9D            STX   2 /04                                8A401250
0067 0  0806            XIO     CEOFF                              8A401260
                    *                                              8A401270
                    *           NORMAL EXIT POINT                  8A401280
                    *                                              8A401290
0068 00 66000000    SAVE2   LDX   L2 0                             8A401300
006A 0  70A2            MDX     QQQQ    EXIT TO AUX LOADER         8A401310
                    ************************************************ 8A401320
                    *                                              8A401330
                    *           CONSTANTS AND/OR IOCC WORDS        8A401340
                    *                                              8A401350
```

```
006B 0  0000      TEMPQ DC    /0000
006C    0000            BSS E 0
006C 0  FF00      SENBI DC    /FF00     TERMINATE CONSTANT
006D 0  0760            DC    /0760     SENSE CE SWITCHES
006E 0  0C00      CEOFF DC    /0C00     SHIFT NORMAL COMP
006F 0  0000            DC    /0000     CE OFF IOCC
0070 0  F000      CEON  DC    /F000     CONSTANT
0071 0  0001            DC    /0001     CE ON IOCC
0072 0  7041      DSW   DC    TTTT
0073 0  0701            DC    /0701     SENSE DSW IOCC
0074 0  0079      XIOA  DC    AID
0075 0  0100            DC    /0100     WRITE IOCC
0076 0  0500      REDBK DC    /0500
0077 0  0900            DC    /0900
0078 0  0E00      CALL  DC    /0E00
0079 0  0000      AID   DC    /0000     OUTPUT CHARACTER
                  *                     * THIS LOCATION MUST
                  *                     * BE ODD TO LOAD A+Q
                  *                     * THE SAME.
007A 0  0FF0      GTRCH DC    /0FF0
007B 0  F00F      GBCHA DC    /F00F
007C 0  0802      AREA  DC    /0802     1ST AREA AND MOD BIT
                  *                     * CHANGE THIS VALUE FOR A
                  *                     * 1053 WITH ANOTHER AREA
                  *                     * CODE OR MODIFIER BIT.
                  ********************************************
                  *
                  *           PRINT PATTERN ROUTINE
                  *
007D 00 65000000  NORMA LDX  L1 0
007F 0  6907      HOMPA STX   1 HOS+1
0080 0  C006            LD    HOS+1
0081 0  6200            LDX   2 0
0082 0  4804            BSC   E
0083 0  6208            LDX   2 8
0084 0  1881            SRT   1
0085 0  D001            STO   HOS+1
0086 00 65000086  HOS   LDX  L1 HOS       XR1 HALF COUNT
0088 0C C5000080        LD   L1 STAR
008A 0  D0EE            STO   AID
                  *
008B 0  F0EF            EOR   GBCHA       TEST FOR GO BACK CHAR
008C 00 4C180098        BSC  L GBC,+-     * AND BR IF TRUE
                  *
008E 0  C0EA            LD    AID
008F 0  F0EA            EOR   GTRCH       TEST FOR GO THRU CHAR
0090 00 4C1800A3        BSC  L GTR,+-     * AND BR IF TRUE
                  *
0092 0  C0E6            LD    AID
0093 00 4C1800AE        BSC  L TEC,+-     TERMINATOR BRANCH
                  *
0095 0  C0E3            LD    AID
0096 0  1200            SLA   2 0         SHIFT LEFT 0 OR 8
0097 0  D0E1            STO   AID
0098 00 7401007E        MDX  L NORMA+1,1
009A 0  703D            MDX   EXIT
                  ********************************************
                  *
                  *           GO BACK ROUTINE
                  *
009B 0  C8DD      GBC   LDD     AID
009C 0  18C8            RTE   8
009D 00 D5000080        STO  L1 STAR
009F 00 65000000  POOF  LDX  L1 /0000     PLACE NEW DIST IN XR1
00A1 0  69DC            STX   1 NORMA+1
00A2 0  70DC            MDX   HOMPA
                  ********************************************
                  *
```



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8A401360
8A401370
8A401380
8A401390
8A401400
8A401410
8A401420
8A401430
8A401440
8A401450
8A401460
8A401470
8A401480
8A401490
8A401500
8A401510
8A401520
8A401530
8A401540
8A401550
8A401560
8A401570
8A401580
8A401590
8A401600
8A401610
8A401620
8A401630
8A401640
8A401650
8A401660
8A401670
8A401680
8A401690
8A401700
8A401710
8A401720
8A401730
8A401740
8A401750
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8A401770
8A401780
8A401790
8A401800
8A401810
8A401820
8A401830
8A401840
8A401850
8A401860
8A401870
8A401880
8A401890
8A401900
8A401910
8A401920
8A401930
8A401940
8A401950
8A401960
8A401970
8A401980
8A401990
8A402000
8A402010
8A402020
8A402030
```



```
                  *
                  *           GO THRU ROUTINE
                  *
00A3 0  C8D5      GTR   LDD     AID
00A4 0  18C8            RTE   8
00A5 00 D5000080        STO  L1 STAR
                  *
00A7 00 7402007E        MDX  L  NORMA+1,2
00A9 00 6580007E        LDX  I1 NORMA+1
00AB 0  69F4      ABC   STX   1 POOF+1
00AC 0  69D1            STX   1 NORMA+1
00AD 0  70D1            MDX   HOMPA
                  ********************************************
                  *
                  *           INITIALIZATION FOR ADDITIONAL
                  *           * PRINT PATTERNS
                  *
00AE 0  6100      TEC   LDX   1 0
00AF 0  70FB            MDX   ABC
                  ********************************************
00B0 0  8181      STAR  DC    /8181     CR, CR
00B1 0  F00F            DC    /F00F     GO BACK,GO THRU
00B2 0  3C3E            DC    /3C3E     A
00B3 0  181A            DC    /181A     B
00B4 0  1C1E            DC    /1C1E     C
00B5 0  3032            DC    /3032     D
00B6 0  3436            DC    /3436     E
00B7 0  1012            DC    /1012     F
00B8 0  1416            DC    /1416     G
00B9 0  2426            DC    /2426     H
00BA 0  2022            DC    /2022     I
00BB 0  7C7E            DC    /7C7E     J
00BC 0  585A            DC    /585A     K
00BD 0  5C5E            DC    /5C5E     L
00BE 0  7072            DC    /7072     M
00BF 0  7476            DC    /7476     N
00C0 0  5052            DC    /5052     O
00C1 0  5456            DC    /5456     P
00C2 0  6466            DC    /6466     Q
00C3 0  6062            DC    /6062     R
00C4 0  989A            DC    /989A     S
00C5 0  9C9E            DC    /9C9E     T
00C6 0  B0B2            DC    /B0B2     U
00C7 0  B4B6            DC    /B4B6     V
00C8 0  9092            DC    /9092     W
00C9 0  9496            DC    /9496     X
00CA 0  A4A6            DC    /A4A6     Y
00CB 0  A0A2            DC    /A0A2     Z
00CC 0  FCFE            DC    /FCFE     1
00CD 0  D8DA            DC    /D8DA     2
00CE 0  DCDE            DC    /DCDE     3
00CF 0  F0F2            DC    /F0F2     4
00D0 0  F4F6            DC    /F4F6     5
00D1 0  D0D2            DC    /D0D2     6
00D2 0  D4D6            DC    /D4D6     7
00D3 0  E4E6            DC    /E4E6     8
00D4 0  E0E2            DC    /E0E2     9
00D5 0  C4C6            DC    /C4C6     0
00D6 0  C0C2            DC    /C0C2     *
00D7 0  BCBE            DC    /BCBE     /
00D8 0  8486            DC    /8486     -
00D9 0  8082            DC    /8082     ,
00DA 0  F00F            DC    /F00F     GO BACK,GO THRU
00DB 0  5E20            DC    /5E20     L,I
00DC 0  7434            DC    /7434     N,E
00DD 0  0312            DC    /0312     LINE FEED,F
00DE 0  3434            DC    /3434     E,E
00DF 0  3081            DC    /3081     D,CR RETURN
00E0 0  F00F            DC    /F00F     GO BACK,GO THRU
```



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8A402040
8A402050
8A402060
8A402070
8A402080
8A402090
8A402100
8A402110
8A402120
8A402130
8A402140
8A402150
8A402160
8A402170
8A402180
8A402190
8A402200
8A402210
8A402220
8A402230
8A402240
8A402250
8A402260
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8A402500
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8A402670
8A402680
8A402690
8A402700
8A402710
```

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00E1 0  9E3C            DC      /9E3C       T,A                     8A402720
00E2 0  1841            DC      /1841       B,TAB CHAR              8A402730
00E3 0  4409            DC      /4409       +,SH RED                8A402740
00E4 0  4605            DC      /4605        ,SH BLK                8A402750
00E5 0  4009            DC      /4009       $,SH RED                8A402760
00E6 0  4205            DC      /4205        ,SH BLK                8A402770
00E7 0  0409            DC      /0409       *,SH RED                8A402780
00E8 0  0605            DC      /0605        ,SH BLK                8A402790
00E9 0  0009            DC      /0009       .,SH RED                8A402800
00EA 0  0205            DC      /0205        ,SH BLK                8A402810
00EB 0  2181            DC      /2181       SPACE,CR RETURN         8A402820
00EC 0  F00F            DC      /F00F       GO BACK,GO THRU         8A402830
00ED 0  411A            DC      /411A       TAB CHAR,B              8A402840
00EE 0  3C1C            DC      /3C1C       A,C                     8A402850
00EF 0  5821            DC      /5821       K,SPACE                 8A402860
00F0 0  9A21            DC      /9A21       S,SPACE                 8A402870
00F1 0  5421            DC      /5421       P,SPACE                 8A402880
00F2 0  3C21            DC      /3C21       A,SPACE                 8A402890
00F3 0  1C21            DC      /1C21       C,SPACE                 8A402900
00F4 0  3421            DC      /3421       E,SPACE                 8A402910
00F5 0  2203            DC      /2203       I,LF                    8A402920
00F6 0  1174            DC      /1174       BK SP,N                 8A402930
00F7 0  0311            DC      /0311       LF,BK SP                8A402940
00F8 0  3003            DC      /3003       D,LF                    8A402950
00F9 0  1134            DC      /1134       BK SP,E                 8A402960
00FA 0  0311            DC      /0311       LF,BK SP                8A402970
00FB 0  9681            DC      /9681       X,CR RETURN             8A402980
00FC 0  F00F            DC      /F00F       GO BACK,GO THRU         8A402990
00FD 0  0000            DC      /0000       TERMINATOR              8A403000
                        *                                           8A403010
000D            QQQQ    EQU     /D          GO TO LOADER AT /D      8A403020
70D7            NNNN    EQU     /70D7       FOR CARD LOADER AT /35  8A403030
0813            WWWW    EQU     /0813       SET IN LOADER AT /04    8A403040
7041            TTTT    EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO 8A403050
                        *                   THE BRANCH FROM THE LOADER 8A403060
                        *                   TO RETUR IN THIS PROGRAM. 8A403070
                        ********************************************* 8A403080
00FE    00FD            END     *-1         END CARD NEVER USED     8A403090
```


CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
ABC	00AB	00AF
AID	0079	0048,0060,0074,008A,008E,0092,0095,0097,0098,00A3
AREA	007C	0042
BUILD	0041	0045
CALL	0078	0052
CEOFF	006E	0041,0043,0055,0067
CEON	0070	0046,004F,005B
DSW	0072	003E,0048
EXIT	0058	0063,009A
GBC	009B	008C
GBCHA	007B	008B
GTR	00A3	0090
GTRCH	007A	008F
HOMPA	007F	00A2,00AD
HOS	0086	007F,0080,0085,0086
LUMP	005A	0056
NNNN	70D7	003B
NORMA	007D	0053,005D,0098,00A1,00A7,00A9,00AC
NOTRD	0064	004D
POOF	009F	00AB
QQQQ	000D	006A
REDBK	0076	005F,0062
RETUR	0046	00FE
SAVE2	0068	0047,0050,0059
SENBI	006C	0049,004C
STAR	00BC	0088,009D,00A5
TEC	00AE	0093
TEMPQ	006B	005A,005C
TTTT	7041	0072
WWWW	0813	0064
X1DA	0074	0058

```
                ABS
028C            ORG     /36                                          8A403100
                                                                     8A403110
*****************************************************************  8A403120
*                                                                    8A403130
*       IF THIS PROG IS TO BE USED FOR A MACHINE                     8A403140
* WITH A DIFFERENT AREA CODE, THE LOCATION WHICH                     8A403150
* REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST                   8A403160
* BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A                     8A403170
* MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG                      8A403180
* GENERATOR WRITE-UP FOR PROCEDURE.                                  8A403190
*                                                                    8A403200
*****************************************************************  8A403210
*                                                                    8A403220
*                                                                    8A403230
*                                                                    8A403240
*       2ND 1053 TYPEWRITER DIAGNOSTIC PROG                          8A403250
*       ***********************************                          8A403260
*                                                                    8A403270
* THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE                   8A403280
*                                                                    8A403290
*           CE BIT SW SETTINGS                                       8A403300
*                                                                    8A403310
*           00000001  NORMAL PRINT PATTERN                           8A403320
*           00001101  NORMAL PRINT PATTERN                           8A403330
*                     * WITH ALTERNATE COLOR                         8A403340
*           0C001111   CE SERVICE STOP                               8A403350
*           11111111  PROGRAM TERMINATOR                             8A403360
*                                                                    8A403370
*           ALL OTHER CE BIT SW COMBINATIONS                         8A403380
*           * WILL ACT AS CHAR OR CONTROL                            8A403390
*           * COMMANDS. SEE REFERENCE MANUALS                        8A403400
*           * FOR CHARACTER AND CONTROL CODE                         8A403410
*           * BIT STRUCTURE                                          8A403420
*                                                                    8A403430
*           OTHER OPERATING INSTRUCTIONS                             8A403440
*                                                                    8A403450
*              CLEAR ALL TAB SETTINGS AND                            8A403460
*              * PLACE A NEW TAB STOP AT                             8A403470
*              * ABOUT 40                                            8A403480
*                                                                    8A403490
*              SET MARGINS AT 10 AND 90 TO                           8A403500
*              * ALLOW EXACTLY 80 PRINT POS                          8A403510
*                                                                    8A403520
* THIS PROGRAM WAS WRITTEN TO BE OPERATED WITH                       8A403530
* * AN UPPER CASE/ UPPER CASE TYPE ELEMENT                           8A403540
* * PART NO. 1167969                                                 8A403550
*                                                                    8A403560
* FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION                   8A403570
* REFER TO THE PROGRAM DESCRIPTION WRITE-UP.                         8A403580
*****************************************************************  8A403590
*                                                                    8A403600
*           AUX PROG ENTRY POINTS                                    8A403610
*           *********************                                    8A403620
*                                                                    8A403630
*           1ST PASS ENTRY                                           8A403640
*                                                                    8A403650
* THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN                  8A403660
* * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER                       8A403670
*                                                                    8A403680
0036 0  1000        NOP             NO OPERATION                     8A403690
0037 0  1000        NOP             NO OPERATION                     8A403700
0038 0  1000        NOP             NO OPERATION                     8A403710
0039 0  1000        NOP             NO OPERATION                     8A403720
003A 0  1000        NOP             NO OPERATION                     8A403730
003B 00 65007007    LDX  L1 NNNN    RESTORE LOCATION NICE            8A403740
003D 0  69F7        STX   1 /35     * IN AUX LOADER                  8A403750
*                                                                    8A403760
003E 0  C033        LD      DSW     PLACE BRANCH                     8A403770
```



```
003F 0  D0C4        STO     /04     * TO RETUR LABEL                 8A403780
                *****************************************            8A403790
                *                                                    8A403800
                *       ADD AREA CODE TO THE I/O COMMANDS            8A403810
                *                                                    8A403820
0040 0  6107        LDX   1 7                                        8A403830
0041 0  C16E    BUILD LD    1 CEOFF     GET IOCC WORD AND            8A403840
0042 0  E839          OR      AREA      * OR IN AREA AND             8A403850
0043 0  D16E          STO   1 CEOFF     * PLACE BACK                 8A403860
0044 0  71FE          MDX   1 -2                                     8A403870
0045 0  70F8          MDX     BUILD                                  8A403880
                *                                                    8A403890
                *       ALL BUT 1ST PASS ENTRY POINT                 8A403900
                *                                                    8A403910
0046 0  0829    RETUR XIO     CEON      SET CE MODE                  8A403920
0047 0  6A21          STX   2 SAVE2+1                                8A403930
0048 0  0829          XIO     DSW       SENSE DEVICE STATUS          8A403940
0049 0  0822          XIO     SENBI     SENSE CE SW TO ACCUM         8A403950
004A 0  1008          SLA     8                                      8A403960
004B 0  D02D          STO     AID                                    8A403970
004C 0  F01F          EOR     SENBI                                  8A403980
004D 00 4C180064      BSC  L  NOTRD,+-  BR SW TERMINATE              8A403990
                *                                                    8A404000
004F 0  F020          EOR     CEON                                   8A404010
0050 00 4C180068      BSC  L  SAVE2,+-    BR CE SERVICE STOP         8A404020
                *                                                    8A404030
0052 0  F025          EOR     CALL                                   8A404040
0053 00 4C18007D      BSC  L  NORMA,+-  BR TO NORMAL ROUTINE         8A404050
                *                                                    8A404060
0055 0  F018          EOR     CEOFF                                  8A404070
0056 00 4C18005A      BSC  L  LUMP,+-   BR TO SHIFT NORMAL           8A404080
                *                                                    8A404090
                *****************************************            8A404100
                *                                                    8A404110
0058 0  0818    EXIT  XIO     XIOA      TYPE CHARACTER               8A404120
0059 0  700E          MDX     SAVE2                                  8A404130
                *****************************************            8A404140
                *                                                    8A404150
                *       RED / BLACK ALTERNATE ROUTINE                8A404160
                *                                                    8A404170
005A 0  C010    LUMP  LD      TEMPQ                                  8A404180
005B 0  F015          EOR     CEON+1                                 8A404190
005C 0  D00E          STO     TEMPQ                                  8A404200
005D 00 4C04007D      BSC  L  NORMA,E                                8A404210
005F 0  C816          LDD     REDBK                                  8A404220
0060 0  D018          STO     AID                                    8A404230
0061 0  18D0          RTE     16                                     8A404240
0062 0  D813          STD     REDBK                                  8A404250
0063 0  70F4          MDX     EXIT                                   8A404260
                *****************************************            8A404270
                *                                                    8A404280
                *       EXIT POINTS TO AUX LOADER                    8A404290
                *       *************************                    8A404300
                *                                                    8A404310
                *       TERMINATE EXIT POINT                         8A404320
                *                                                    8A404330
0064 00 66000813 NOTRD LDX  L2 WWWW                                  8A404340
0066 0  6A9D          STX   2 /04                                    8A404350
0067 0  0806          XIO     CEOFF                                  8A404360
                *                                                    8A404370
                *       NORMAL EXIT POINT                            8A404380
                *                                                    8A404390
0068 00 66000000 SAVE2 LDX  L2 0                                     8A404400
006A 0  70A2          MDX     QQQQ      EXIT TO AUX LOADER         8A404410
                *****************************************            8A404420
                *                                                    8A404430
                *       CONSTANTS AND/OR IOCC WORDS                  8A404440
                *                                                    8A404450
```

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006B 0 0000      TEMPQ DC      /0000                                  8A404460
006C   0000            BSS   E 0                                      8A404470
006C 0 FF00      SENBI DC      /FF00     TERMINATE CONSTANT           8A404480
006D 0 0760            DC      /0760     SENSE CE SWITCHES            8A404490
006E 0 0C00      CEOFF DC      /0C00     SHIFT NORMAL COMP            8A404500
006F 0 0000            DC      /0000     CE OFF IOCC                  8A404510
0070 0 F000      CEON  DC      /F000     CONSTANT                     8A404520
0071 0 0001            DC      /0001     CE ON IOCC                   8A404530
0072 0 7041      DSW   DC      TTTT                                   8A404540
0073 0 0701            DC      /0701     SENSE DSW IOCC               8A404550
0074 0 0079      XIOA  DC      AID                                    8A404560
0075 0 0100            DC      /0100     WRITE IOCC                   8A404570
0076 0 0500      REDBK DC      /0500                                  8A404580
0077 0 0900            DC      /0900                                  8A404590
0078 0 0E00      CALL  DC      /0EC0                                  8A404600
0079 0 0000      AID   DC      /0000     OUTPUT CHARACTER             8A404610
                 *                       * THIS LOCATION MUST         8A404620
                 *                       * BE ODD TO LOAD A+Q         8A404630
                 *                       * THE SAME.                  8A404640
                 *                                                    8A404650
007A 0 0FF0      GTRCH DC      /0FF0                                  8A404660
007B 0 F00F      GBCHA DC      /F00F                                  8A404670
007C 0 0804      AREA  DC      /0804     1ST AREA AND 2ND MOD BIT     8A404680
                 *                       * CHANGE THIS VALUE FOR A    8A404690
                 *                       * 1053 WITH ANOTHER AREA     8A404700
                 *                       * CODE OR MODIFIER BIT.      8A404710
                 ********************************************         8A404720
                 *                                                    8A404730
                 *            PRINT PATTERN ROUTINE                   8A404740
                 *                                                    8A404750
007D 00 65000000 NORMA LDX   L1 0                                    8A404760
007F 0  69C7     HOMPA STX    1 HOS+1                                8A404770
0080 0  C006          LD      HOS+1                                  8A404780
0081 0  6200          LDX   2 0                                      8A404790
0082 0  4804          BSC     E                                      8A404800
0083 0  6208          LDX   2 8                                      8A404810
0084 0  1881          SRT     1                                      8A404820
0085 0  D001          STO     HOS+1                                  8A404830
0086 00 65000086 HOS  LDX   L1 HOS      XR1 HALF COUNT               8A404840
0088 00 C5000080      LD    L1 STAR                                  8A404850
008A 0  D0EE          STO     AID                                    8A404860
                 *                                                  8A404870
008B 0  F0EF          EOR     GBCHA     TEST FOR GO BACK CHAR        8A404880
008C 00 4C180098      BSC   L GBC,+-    * AND BR IF TRUE             8A404890
                 *                                                  8A404900
008E 0  C0EA          LD      AID                                    8A404910
008F 0  F0EA          EOR     GTRCH     TEST FOR GO THRU CHAR        8A404920
0090 00 4C1800A3      BSC   L GTR,+-    * AND BR IF TRUE             8A404930
                 *                                                  8A404940
0092 0  C0E6          LD      AID                                    8A404950
0093 00 4C1800AE      BSC   L TEC,+-    TERMINATOR BRANCH            8A404960
                 *                                                  8A404970
0095 0  C0E3          LD      AID                                    8A404980
0096 0  1200          SLA   2 0         SHIFT LEFT 0 OR 8            8A404990
0097 0  D0E1          STO     AID                                    8A405000
0098 00 7401007E      MDX   L NORMA+1,1                              8A405010
009A 0  708D          MDX     EXIT                                   8A405020
                 ********************************************       8A405030
                 *                                                  8A405040
                 *            GO BACK ROUTINE                       8A405050
                 *                                                  8A405060
009B 0  C0DD     GBC  LDD     AID                                    8A405070
009C 0  18C8          RTE     8                                      8A405080
009D 00 D50000B0      STO   L1 STAR                                  8A405090
009F 00 65000000 POOF LDX   L1 /0000      PLACE NEW DIST IN XR1      8A405100
00A1 0  69DC          STX     1 NORMA+1                              8A405110
00A2 0  70DC          MDX     HOMPA                                  8A405120
                 ********************************************       8A405130
                 *
```



```
                 *            GO THRU ROUTINE                       8A405140
                 *                                                  8A405150
00A3 0  C8D5     GTR  LDD     AID                                    8A405160
00A4 0  18C8          RTE     8                                      8A405170
00A5 00 D50000B0      STO   L1 STAR                                  8A405180
                 *                                                  8A405190
00A7 00 7402007E      MDX   L NORMA+1,2                              8A405200
00A9 00 6580007E      LDX   I1 NORMA+1                               8A405210
00AB 0  69F4     ABC  STX     1 POOF+1                               8A405220
00AC 0  69D1          STX     1 NORMA+1                              8A405230
00AD 0  70D1          MDX     HOMPA                                  8A405240
                 ********************************************       8A405250
                 *                                                  8A405260
                 *            INITIALIZATION FOR ADDITIONAL         8A405270
                 *            * PRINT PATTERNS                      8A405280
                 *                                                  8A405290
00AE 0  6100     TEC  LDX   1 0                                      8A405300
00AF 0  70FB          MDX     ABC                                    8A405310
                 ********************************************       8A405320
00B0 0  8181     STAR DC      /8181     CR, CR                       8A405330
00B1 0  F00F          DC      /F00F     GO BACK,GO THRU              8A405340
00B2 0  3C3E          DC      /3C3E     A                            8A405350
00B3 0  181A          DC      /181A     B                            8A405360
00B4 0  1C1E          DC      /1C1E     C                            8A405370
00B5 0  3032          DC      /3032     D                            8A405380
00B6 0  3436          DC      /3436     E                            8A405390
00B7 0  1012          DC      /1012     F                            8A405400
00B8 0  1416          DC      /1416     G                            8A405410
00B9 0  2426          DC      /2426     H                            8A405420
00BA 0  2022          DC      /2022     I                            8A405430
00BB 0  7C7E          DC      /7C7E     J                            8A405440
00BC 0  585A          DC      /585A     K                            8A405450
00BD 0  5C5E          DC      /5C5E     L                            8A405460
00BE 0  7072          DC      /7072     M                            8A405470
00BF 0  7476          DC      /7476     N                            8A405480
00C0 0  5052          DC      /5052     O                            8A405490
00C1 0  5456          DC      /5456     P                            8A405500
00C2 0  6466          DC      /6466     Q                            8A405510
00C3 0  6062          DC      /6062     R                            8A405520
00C4 0  989A          DC      /989A     S                            8A405530
00C5 0  9C9E          DC      /9C9E     T                            8A405540
00C6 0  B0B2          DC      /B0B2     U                            8A405550
00C7 0  B4B6          DC      /B4B6     V                            8A405560
00C8 0  9092          DC      /9092     W                            8A405570
00C9 0  9496          DC      /9496     X                            8A405580
00CA 0  A4A6          DC      /A4A6     Y                            8A405590
00CB 0  A0A2          DC      /A0A2     Z                            8A405600
00CC 0  FCFE          DC      /FCFE     1                            8A405610
00CD 0  D8DA          DC      /D8DA     2                            8A405620
00CE 0  DCDE          DC      /DCDE     3                            8A405630
00CF 0  F0F2          DC      /F0F2     4                            8A405640
00D0 0  F4F6          DC      /F4F6     5                            8A405650
00D1 0  D0D2          DC      /D0D2     6                            8A405660
00D2 0  D4D6          DC      /D4D6     7                            8A405670
00D3 0  E4E6          DC      /E4E6     8                            8A405680
00D4 0  E0E2          DC      /E0E2     9                            8A405690
00D5 0  C4C6          DC      /C4C6     0                            8A405700
00D6 0  C0C2          DC      /C0C2     =                            8A405710
00D7 0  BCBE          DC      /BCBE     /                            8A405720
00D8 0  8486          DC      /8486     -                            8A405730
00D9 0  8082          DC      /8082     .                            8A405740
00DA 0  F00F          DC      /F00F     GO BACK,GO THRU              8A405750
00DB 0  5E20          DC      /5E20     L,I                          8A405760
00DC 0  7434          DC      /7434     N,E                          8A405770
00DD 0  0312          DC      /0312     LINE FEED,F                  8A405780
00DE 0  3434          DC      /3434     E,E                          8A405790
00DF 0  3081          DC      /3081     D,CR RETURN                  8A405800
00E0 0  F00F          DC      /F00F     GO BACK,GO THRU              8A405810
```

```
00E1 0  9E3C            DC      /9E3C       T,A                         8A405820
00E2 0  1841            DC      /1841       B,TAB CHAR                  8A405830
00E3 0  4409            DC      /4409       +,SH RED                    8A405840
00E4 0  4405            DC      /4605        ,SH BLK                    8A405850
00E5 0  4009            DC      /4009       $,SH RED                    8A405860
00E6 0  4205            DC      /4205        ,SH BLK                    8A405870
00E7 0  0409            DC      /0409       ',SH RED                    8A405880
00E8 0  0605            DC      /0605        ,SH BLK                    8A405890
00E9 0  0009            DC      /0009       .,SH RED                    8A405900
00EA 0  0205            DC      /0205        ,SH BLK                    8A405910
00EB 0  2181            DC      /2181       SPACE,CR RETURN             8A405920
00EC 0  F00F            DC      /F00F       GO BACK,GO THRU             8A405930
00ED 0  411A            DC      /411A       TAB CHAR,B                  8A405940
00EE 0  3C1C            DC      /3C1C       A,C                         8A405950
00EF 0  5821            DC      /5821       K,SPACE                     8A405960
00F0 0  9A21            DC      /9A21       S,SPACE                     8A405970
00F1 0  5421            DC      /5421       P,SPACE                     8A405980
00F2 0  3C21            DC      /3C21       A,SPACE                     8A405990
00F3 0  1C21            DC      /1C21       C,SPACE                     8A406000
00F4 0  3421            DC      /3421       E,SPACE                     8A406010
00F5 0  2203            DC      /2203       I,LF                        8A406020
00F6 0  1174            DC      /1174       BK SP,N                     8A406030
00F7 0  0311            DC      /0311       LF,BK SP                    8A406040
00F8 0  3003            DC      /3003       D,LF                        8A406050
00F9 0  1134            DC      /1134       BK SP,E                     8A406060
00FA 0  0311            DC      /0311       LF,BK SP                    8A406070
00FB 0  9681            DC      /9681       X,CR RETURN                 8A406080
00FC 0  F00F            DC      /F00F       GO BACK,GO THRU             8A406090
00FD 0  0000            DC      /0000       TERMINATOR                  8A406100
                *                                                       8A406110
000D            QQQQ    EQU     /D          GO TO LOADER AT /D          8A406120
70D7            NNNN    EQU     /70D7       FOR CARD LOADER AT /35      8A406130
0813            WWWW    EQU     /0813       SET IN LOADER AT /04        8A406140
7041            TTTT    EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO    8A406150
                *                           THE BRANCH FROM THE LOADER  8A406160
                *                           TO RETUR IN THIS PROGRAM.   8A406170
                ********************************************************8A406180
00FE    00FD            END     *-1         END CARD NEVER USED         8A406190
```


CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
ABC	00AB	00AF
AID	0079	0048,0060,0074,008A,008E,0092,0095,0097,009B,00A3
AREA	007C	0042
BUILD	0041	0045
CALL	0078	0052
CEOFF	006E	0041,0043,0055,0067
CEON	0070	0046,004F,0058
DSW	0072	003E,0048
EXIT	0058	0063,009A
GBC	009B	008C
GBCHA	007B	0088
GTR	00A3	009J
GTRCH	007A	008F
HOMPA	007F	00A2,00AD
HOS	0086	007F,0080,0085,0086
LUMP	005A	0056
NNNN	70D7	003B
NORMA	007D	0053,005D,0098,00A1,00A7,00A9,00AC
NOTRD	0064	004D
POOF	009F	00AB
QQQQ	000D	006A
REDBK	0076	005F,0062
RETUR	0046	00FE
SAVE2	0068	0047,0050,0059
SENBI	006C	0049,004C
STAR	0080	0088,009D,00A5
TEC	00AE	0093
TEMPQ	006B	005A,005C
TTTT	7041	0072
WWWW	0813	0064
XIOA	0074	0058

F
L


```
                        ABS
02BC                    ORG     /36
                 **************************************************
                 *
                 *        IF THIS PROG IS TO BE USED FOR A MACHINE
                 * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH
                 * REFER TO THE LABEL   AREA    IN SYMBOL TABLE MUST
                 * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A
                 * MODIFIED AUX 3-8 OBJECT DECK. SEE AUX CE PROG
                 * GENERATOR WRITE-UP FOR PROCEDURE.
                 *
                 **************************************************
                 *
                 *
                 *
                 *       3RD 1053 TYPEWRITER DIAGNOSTIC PROG
                 *       **********************************
                 *
                 * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE
                 *
                 *            CE BIT SW SETTINGS
                 *
                 *            00000001  NORMAL PRINT PATTERN
                 *            00001101  NORMAL PRINT PATTERN
                 *                      * WITH ALTERNATE COLOR
                 *            00001111   CE SERVICE STOP
                 *            11111111  PROGRAM TERMINATOR
                 *
                 *            ALL OTHER CE BIT SW COMBINATIONS
                 *            * WILL ACT AS CHAR OR CONTROL
                 *            * COMMANDS. SEE REFERENCE MANUALS
                 *            * FOR CHARACTER AND CONTROL CODE
                 *            * BIT STRUCTURE
                 *
                 *            OTHER OPERATING INSTRUCTIONS
                 *
                 *               CLEAR ALL TAB SETTINGS AND
                 *               * PLACE A NEW TAB STOP AT
                 *               * ABOUT 40
                 *
                 *               SET MARGINS AT 10 AND 90 TO
                 *               * ALLOW EXACTLY 80 PRINT POS
                 *
                 * THIS PROGRAM WAS WRITTEN TO BE OPERATED WITH
                 * * AN UPPER CASE/ UPPER CASE TYPE ELEMENT
                 * * PART NO. 1167969
                 *
                 * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION
                 * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.
                 ******************************************
                 *
                 *            AUX PROG ENTRY POINTS
                 *            *********************
                 *
                 *            1ST PASS ENTRY
                 *
                 * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN
                 * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER
                 *
0036 0  1000            NOP                  NO OPERATION
0037 0  1000            NOP                  NO OPERATION
0038 0  1000            NOP                  NO OPERATION
0039 0  1000            NOP                  NO OPERATION
003A 0  1000            NOP                  NO OPERATION
003B 00 650070D7        LDX   L1 NNNN        RESTORE LOCATION NICE
003D 0  69F7            STX    1 /35         * IN AUX LOADER
                 *
003E 0  C033            LD       DSW         PLACE BRANCH
```



```
003F 0  D0C4            STO      /04          * TO RETUR LABEL
                 ***************************************************
                 *
                 *              ADD AREA CODE TO THE I/O COMMANDS
                 *
0040 0  6107            LDX    1 7
0041 0  C16E      BUILD LD     1 CEOFF        GET IOCC WORD AND
0042 0  E839            OR       AREA         * OR IN AREA AND
0043 0  D16E            STO    1 CEOFF        * PLACE BACK
0044 0  71FE            MDX    1 -2
0045 0  70FB            MDX      BUILD
                 *
                 *              ALL BUT 1ST PASS ENTRY POINT
                 *
0046 0  0829      RETUR XIO      CEON         SET CE MODE
0047 0  6A21            STX    2 SAVE2+1
0048 0  0829            XIO      DSW          SENSE DEVICE STATUS
0049 0  0822            XIO      SENBI        SENSE CE SW TO ACCUM
004A 0  1008            SLA      8
004B 0  D02D            STO      AID
004C 0  F01F            EOR      SENBI
004D 00 4C180064        BSC   L  NOTRD,+-     BR SW TERMINATE
                 *
004F 0  F020            EOR      CEON
0050 00 4C180068        BSC   L  SAVE2,+-      BR CE SERVICE STOP
                 *
0052 0  F025            EOR      CALL
0053 00 4C18007D        BSC   L  NORMA,+-     BR TO NORMAL ROUTINE
                 *
0055 0  F018            EOR      CEOFF
0056 00 4C18005A        BSC   L  LUMP,+-      BR TO SHIFT NORMAL
                 *
                 ***************************************************
                 *
0058 0  081B      EXIT  XIO      XIOA         TYPE CHARACTER
0059 0  700E            MDX      SAVE2
                 ***************************************************
                 *
                 *              RED / BLACK ALTERNATE ROUTINE
                 *
005A 0  C010      LUMP  LD       TEMPQ
005B 0  F015            EOR      CEON+1
005C 0  D00E            STO      TEMPQ
005D 00 4C04007D        BSC   L  NORMA,E
005F 0  C816            LDD      REDBK
0060 0  D018            STO      AID
0061 0  18D0            RTE      16
0062 0  D813            STD      REDBK
0063 0  70F4            MDX      EXIT
                 ***************************************************
                 *
                 *              EXIT POINTS TO AUX LOADER
                 *              *************************
                 *
                 *              TERMINATE EXIT POINT
                 *
0064 00 66000813  NOTRD LDX   L2 WWWW
0066 0  6A9D            STX    2 /04
0067 0  0806            XIO      CEOFF
                 *
                 *              NORMAL EXIT POINT
                 *
0068 00 66000000  SAVE2 LDX   L2 0
006A 0  70A2            MDX      QQQQ         EXIT TO AUX LOADER
                 ***************************************************
                 *
                 *              CONSTANTS AND/OR IOCC WORDS
                 *
```

```
006B 0  0000      TEMPQ DC      /0000                                  8A407560
006C    0000            BSS   E 0                                      8A407570
006C 0  FF00      SENBI DC      /FF00     TERMINATE CONSTANT           8A407580
006D 0  0760            DC      /0760     SENSE CE SWITCHES            8A407590
006E 0  0C00      CEOFF DC      /0C00     SHIFT NORMAL COMP            8A407600
006F 0  0000            DC      /0000     CE OFF IOCC                  8A407610
0070 0  F000      CEON  DC      /F000     CONSTANT                     8A407620
0071 0  0001            DC      /0001     CE ON IOCC                   8A407630
0072 0  7041      DSW   DC      TTT                                    8A407640
0073 0  0701            DC      /0701     SENSE DSW IOCC               8A407650
0074 0  0079      XIOA  DC      AID                                    8A407660
0075 0  0100            DC      /0100     WRITE IOCC                   8A407670
0076 0  0500      REDBK DC      /0500                                  8A407680
0077 0  0900            DC      /0900                                  8A407690
0078 0  0E00      CALL  DC      /0E00                                  8A407700
0079 0  0000      AID   DC      /0000     OUTPUT CHARACTER             8A407710
                  *                       * THIS LOCATION MUST         8A407720
                  *                       * BE ODD TO LOAD A+Q         8A407730
                  *                       * THE SAME.                  8A407740
007A 0  0FF0      GTRCH DC      /0FF0                                  8A407750
0078 0  F00F      GBCHA DC      /F00F                                  8A407760
007C 0  0808      AREA  DC      /0808     1ST AREA AND 3RD MOD BIT     8A407770
                  *                       * CHANGE THIS VALUE FOR A    8A407780
                  *                       * 1053 WITH ANOTHER AREA     8A407790
                  *                       * CODE OR MODIFIER BIT.      8A407800
                  ********************************************         8A407810
                  *                                                    8A407820
                  *           PRINT PATTERN ROUTINE                    8A407830
                  *                                                    8A407840
007D 00 65000000  NORMA LDX   L1 0                                     8A407850
007F 0  6907      HOMPA STX    1 HOS+1                                 8A407860
                        LD      HOS+1                                  8A407870
0080 0  C006            LDX   2 0                                      8A407880
0081 0  6200            BSC     E                                      8A407890
0082 0  4804            LDX   2 8                                      8A407900
0083 0  6208            SRT     1                                      8A407910
0084 0  1881            STO     HOS+1                                  8A407920
0085 0  D001      HOS   LDX   L1 HOS      XR1 HALF COUNT               8A407930
0086 00 65000086        LD    L1 STAR                                  8A407940
0088 00 C5000080        STO     AID                                    8A407950
008A 0  D0EE            *                                            8A407960
008B 0  F0EF            EOR     GBCHA     TEST FOR GO BACK CHAR        8A407970
008C 00 4C180098        BSC   L GBC,+-    * AND BR IF TRUE             8A407980
                        *                                            8A407990
008E 0  C0EA            LD      AID                                    8A408000
008F 0  F0EA            EOR     GTRCH     TEST FOR GO THRU CHAR        8A408010
0090 00 4C1800A3        BSC   L GTR,+-    * AND BR IF TRUE             8A408020
                        *                                            8A408030
0092 0  C0E6            LD      AID                                    8A408040
0093 00 4C1800AE        BSC   L TEC,+-    TERMINATOR BRANCH            8A408050
                        *                                            8A408060
0095 0  C0E3            LD      AID                                    8A408070
0096 0  1200            SLA   2 0         SHIFT LEFT 0 OR 8            8A408080
0097 0  D0E1            STO     AID                                    8A408090
0098 00 7401007E        MDX   L NORMA+1,1                              8A408100
009A 0  70BD            MDX     EXIT                                   8A408110
                  ********************************************         8A408120
                  *                                                    8A408130
                  *           GO BACK ROUTINE                          8A408140
                  *                                                    8A408150
009B 0  C8DD      GBC   LDD     AID                                    8A408160
009C 0  18C8            RTE     8                                      8A408170
009D 00 D5000080        STO   L1 STAR                                  8A408180
009F 00 65000000  POOF  LDX   L1 /0000    PLACE NEW DIST IN XR1        8A408190
00A1 0  69DC            STX     1 NORMA+1                              8A408200
00A2 0  70DC            MDX     HOMPA                                  8A408210
                  ********************************************         8A408220
                  *                                                    8A408230
```



```
                  *           GO THRU ROUTINE                          8A408240
                  *                                                    8A408250
00A3 0  C8D5      GTR   LDD     AID                                    8A408260
00A4 0  18C8            RTE     8                                      8A408270
00A5 00 D5000080        STO   L1 STAR                                  8A408280
                        *                                            8A408290
00A7 00 7402007E        MDX   L NORMA+1,2                              8A408300
00A9 00 6580007E        LDX   I1 NORMA+1                               8A408310
00AB 0  69F4      ABC   STX     1 POOF+1                               8A408320
00AC 0  69D1            STX     1 NORMA+1                              8A408330
00AD 0  70D1            MDX     HOMPA                                  8A408340
                  ********************************************         8A408350
                  *                                                    8A408360
                  *           INITIALIZATION FOR ADDITIONAL            8A408370
                  *           * PRINT PATTERNS                         8A408380
                  *                                                    8A408390
00AE 0  6100      TEC   LDX   1 0                                      8A408400
00AF 0  70FB            MDX     ABC                                    8A408410
                  ********************************************         8A408420
0080 0  8181      STAR  DC      /8181     CR, CR                       8A408430
0081 0  F00F            DC      /F00F     GO BACK,GO THRU              8A408440
0082 0  3C3E            DC      /3C3E     A                            8A408450
0083 0  181A            DC      /181A     B                            8A408460
0084 0  1C1E            DC      /1C1E     C                            8A408470
0085 0  3032            DC      /3032     D                            8A408480
0086 0  3436            DC      /3436     E                            8A408490
0087 0  1012            DC      /1012     F                            8A408500
0088 0  1416            DC      /1416     G                            8A408510
0089 0  2426            DC      /2426     H                            8A408520
008A 0  2022            DC      /2022     I                            8A408530
008B 0  7C7E            DC      /7C7E     J                            8A408540
008C 0  585A            DC      /585A     K                            8A408550
008D 0  5C5E            DC      /5C5E     L                            8A408560
008E 0  7072            DC      /7072     M                            8A408570
008F 0  7476            DC      /7476     N                            8A408580
00C0 0  5052            DC      /5052     O                            8A408590
00C1 0  5456            DC      /5456     P                            8A408600
00C2 0  6466            DC      /6466     Q                            8A408610
00C3 0  6062            DC      /6062     R                            8A408620
00C4 0  989A            DC      /989A     S                            8A408630
00C5 0  9C9E            DC      /9C9E     T                            8A408640
00C6 0  B0B2            DC      /B0B2     U                            8A408650
00C7 0  B4B6            DC      /B4B6     V                            8A408660
00C8 0  9092            DC      /9092     W                            8A408670
00C9 0  9496            DC      /9496     X                            8A408680
00CA 0  A4A6            DC      /A4A6     Y                            8A408690
00CB 0  A0A2            DC      /A0A2     Z                            8A408700
00CC 0  FCFE            DC      /FCFE     1                            8A408710
00CD 0  D8DA            DC      /D8DA     2                            8A408720
00CE 0  DCDE            DC      /DCDE     3                            8A408730
00CF 0  F0F2            DC      /F0F2     4                            8A408740
00D0 0  F4F6            DC      /F4F6     5                            8A408750
00D1 0  D0D2            DC      /D0D2     6                            8A408760
00D2 0  D4D6            DC      /D4D6     7                            8A408770
00D3 0  E4E6            DC      /E4E6     8                            8A408780
00D4 0  E0E2            DC      /E0E2     9                            8A408790
00D5 0  C4C6            DC      /C4C6     0                            8A408800
00D6 0  C0C2            DC      /C0C2     =                            8A408810
00D7 0  BCBE            DC      /BCBE     /                            8A408820
00D8 0  8486            DC      /8486     -                            8A408830
00D9 0  8082            DC      /8082     .                            8A408840
00DA 0  F00F            DC      /F00F     GO BACK,GO THRU              8A408850
00DB 0  5E20            DC      /5E20     L,I                          8A408860
00DC 0  7434            DC      /7434     N,E                          8A408870
00DD 0  0312            DC      /0312     LINE FEED,F                  8A408880
00DE 0  3434            DC      /3434     E,E                          8A408890
00DF 0  3081            DC      /3081     D,CR RETURN                  8A408900
00E0 0  F00F            DC      /F00F     GO BACK,GO THRU              8A408910
```

```
00E1 0  9E3C            DC      /9E3C     T,A                          8A408920
00E2 0  1841            DC      /1841     B,TAB CHAR                   8A408930
00E3 0  4409            DC      /4409     ',SH RED                     8A408940
00E4 0  4605            DC      /4605      ,SH BLK                     8A408950
00E5 0  4009            DC      /4009     $,SH RED                     8A408960
00E6 0  4205            DC      /4205      ,SH BLK                     8A408970
00E7 0  0409            DC      /0409     ',SH RED                     8A408980
00E8 0  0605            DC      /0605      ,SH BLK                     8A408990
00E9 0  0009            DC      /0009     .,SH RED                     8A409000
00EA 0  0205            DC      /0205      ,SH BLK                     8A409010
00EB 0  2181            DC      /2181     SPACE,CR RETURN              8A409020
00EC 0  F00F            DC      /F00F     GO BACK,GO THRU              8A409030
00ED 0  411A            DC      /411A     TAB CHAR,B                   8A409040
00EE 0  3C1C            DC      /3C1C     A,C                          8A409050
00EF 0  5821            DC      /5821     K,SPACE                      8A409060
00F0 0  9A21            DC      /9A21     S,SPACE                      8A409070
00F1 0  5421            DC      /5421     P,SPACE                      8A409080
00F2 0  3C21            DC      /3C21     A,SPACE                      8A409090
00F3 0  1C21            DC      /1C21     C,SPACE                      8A409100
00F4 0  3421            DC      /3421     E,SPACE                      8A409110
00F5 0  2203            DC      /2203     I,LF                         8A409120
00F6 0  1174            DC      /1174     BK SP,N                      8A409130
00F7 0  0311            DC      /0311     LF,BK SP                     8A409140
00F8 0  3003            DC      /3003     D,LF                         8A409150
00F9 0  1134            DC      /1134     BK SP,E                      8A409160
00FA 0  0311            DC      /0311     LF,BK SP                     8A409170
00FB 0  9681            DC      /9681     X,CR RETURN                  8A409180
00FC 0  F00F            DC      /F00F     GO BACK,GO THRU              8A409190
00FD 0  0000            DC      /0000     TERMINATOR                   8A409200
                        *                                              8A409210
00OD            QQQQ    EQU     /D        GO TO LOADER AT /D           8A409220
70D7            NNNN    EQU     /70D7     FOR CARD LOADER AT /35       8A409230
0813            WWWW    EQU     /0813     SET IN LOADER AT /04         8A409240
7041            TTTT    EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO   8A409250
                        *                   THE BRANCH FROM THE LOADER 8A409260
                        *                   TO RETUR IN THIS PROGRAM.  8A409270
                        ********************************************     8A409280
00FE    00FD            END     *-1       END CARD NEVER USED          8A409290
```


CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
ABC	00AB	00AF
AID	0079	0048,0060,0C74,008A,008E,0092,0095,0097,0098,00A3
AREA	007C	0042
BUILD	0041	0045
CALL	0078	0052
CEOFF	006E	0041,0043,0055,0067
CEON	0070	0046,004F,0058
DSW	0072	003E,0048
EXIT	0058	0063,009A
GBC	009B	008C
GBCHA	007B	008B
GTR	00A3	0090
GTRCH	007A	008F
HOMEA	007F	00A2,00AD
HOS	0086	007F,0080,0085,0086
LUMP	005A	0056
NNNN	70D7	003B
NORMA	007D	0053,005D,0098,00A1,00A7,00A9,00AC
NOTRD	0064	004D
POOF	009F	00AB
QQQQ	000D	006A
REDBK	0076	005F,0062
RETUR	0046	00FE
SAVE2	0068	0047,0050,0059
SENBI	006C	0049,004C
STAR	0080	0088,009D,00A5
TEC	00AE	0093
TEMPQ	006B	005A,005C
TTTT	7041	0072
WWWW	0813	0064
XIOA	0074	0058

```
028C                    ABS
                        ORG     /36                                     8A409300
                *********************************************************8A409310
                *                                                       *8A409320
                *       IF THIS PROG IS TO BE USED FOR A MACHINE        *8A409330
                * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH        *8A409340
                * REFER TO THE LABEL    AREA    IN SYMBOL TABLE MUST    *8A409350
                * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A        *8A409360
                * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG         *8A409370
                * GENERATOR WRITE-UP FOR PROCEDURE.                     *8A409380
                *                                                       *8A409390
                *********************************************************8A409400
                *                                                       *8A409410
                *                                                       *8A409420
                *                                                       *8A409430
                *         4TH 1053 TYPEWRITER DIAGNOSTIC PROG           *8A409440
                *         ***********************************           *8A409450
                *                                                       *8A409460
                * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE      *8A409470
                *                                                       *8A409480
                *             CE BIT SW SETTINGS                        *8A409490
                *                                                       *8A409500
                *             00000001  NORMAL PRINT PATTERN            *8A409510
                *             00001101  NORMAL PRINT PATTERN            *8A409520
                *                       * WITH ALTERNATE COLOR          *8A409530
                *             0000i111   CE SERVICE STOP                *8A409540
                *             11111111  PROGRAM TERMINATOR              *8A409550
                *                                                       *8A409560
                *             ALL OTHER CE BIT SW COMBINATIONS          *8A409570
                *             * WILL ACT AS CHAR OR CONTROL             *8A409580
                *             * COMMANDS. SEE REFERENCE MANUALS         *8A409590
                *             * FOR CHARACTER AND CONTROL CODE          *8A409600
                *             * BIT STRUCTURE                           *8A409610
                *                                                       *8A409620
                *             OTHER OPERATING INSTRUCTIONS              *8A409630
                *                                                       *8A409640
                *                CLEAR ALL TAB SETTINGS AND             *8A409650
                *                * PLACE A NEW TAB STOP AT              *8A409660
                *                * ABOUT 40                             *8A409670
                *                                                       *8A409680
                *                SET MARGINS AT 10 AND 90 TO            *8A409690
                *                * ALLOW EXACTLY 80 PRINT POS           *8A409700
                *                                                       *8A409710
                * THIS PROGRAM WAS WRITTEN TO BE OPERATED WITH          *8A409720
                * * AN UPPER CASE/ UPPER CASE TYPE ELEMENT              *8A409730
                * * PART NO. 1167969                                    *8A409740
                *                                                       *8A409750
                * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION      *8A409760
                * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.            *8A409770
                *********************************************************8A409780
                *                                                       *8A409790
                *             AUX PROG ENTRY POINTS                     *8A409800
                *             *********************                     *8A409810
                *                                                       *8A409820
                *             1ST PASS ENTRY                            *8A409830
                *                                                       *8A409840
                * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN     *8A409850
                * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER          *8A409860
                *                                                       *8A409870
0036 0  1000            NOP             NO OPERATION                    8A409880
0037 0  1000            NOP             NO OPERATION                    8A409890
0038 0  1000            NOP             NO OPERATION                    8A409900
0039 0  1000            NOP             NO OPERATION                    8A409910
003A 0  1000            NOP             NO OPERATION                    8A409920
003B 00 65007007        LDX  L1 NNNN    RESTORE LOCATION NICE           8A409930
003D 0  69F7            STX   1 /35     * IN AUX LOADER                 8A409940
                *                                                       8A409950
003E 0  C033            LD      DSW     PLACE BRANCH                    8A409960
                                                                        8A409970
```



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003F 0  D0C4            STO     /04     * TO RETUR LABEL                8A409980
                *********************************************************8A409990
                *                                                       *8A410000
                *             ADD AREA CODE TO THE I/O COMMANDS         *8A410010
                *                                                       *8A410020
0040 0  6107            LDX   1 7                                       8A410030
0041 0  C16E    BUILD   LD    1 CEOFF   GET IOCC WORD AND               8A410040
0042 0  E839            OR      AREA    * OR IN AREA AND                8A410050
0043 0  D16E            STO   1 CEOFF   * PLACE BACK                    8A410060
0044 0  71FE            MDX   1 -2                                      8A410070
0045 0  70F8            MDX     BUILD                                   8A410080
                *                                                       8A410090
                *             ALL BUT 1ST PASS ENTRY POINT              8A410100
                *                                                       8A410110
0046 0  0829    RETUR   XIO     CEON    SET CE MODE                     8A410120
0047 0  6A21            STX   2 SAVE2+1                                 8A410130
0048 0  0829            XIO     DSW     SENSE DEVICE STATUS             8A410140
0049 0  0822            XIO     SENBI   SENSE CE SW TO ACCUM            8A410150
004A 0  1008            SLA     8                                       8A410160
004B 0  D02D            STO     AID                                     8A410170
004C 0  F01F            EOR     SENBI                                   8A410180
004D 00 4C180064        BSC   L NOTRD,+-  BR SW TERMINATE               8A410190
                *                                                       8A410200
004F 0  F020            EOR     CEON                                    8A410210
0050 00 4C180068        BSC   L SAVE2,+-   BR CE SERVICE STOP           8A410220
                *                                                       8A410230
0052 0  F025            EOR     CALL                                    8A410240
0053 00 4C18007D        BSC   L NORMA,+-  BR TO NORMAL ROUTINE          8A410250
                *                                                       8A410260
0055 0  F018            EOR     CEOFF                                   8A410270
0056 00 4C18005A        BSC   L LUMP,+-   BR TO SHIFT NORMAL            8A410280
                *********************************************************8A410290
                *                                                       *8A410300
0058 0  081B    EXIT    XIO     XIOA    TYPE CHARACTER                  8A410310
0059 0  700E            MDX     SAVE2                                   8A410320
                *********************************************************8A410330
                *                                                       *8A410340
                *             RED / BLACK ALTERNATE ROUTINE             *8A410350
                *                                                       *8A410360
005A 0  C010    LUMP    LD      TEMPQ                                   8A410370
005B 0  F015            EOR     CEON+1                                  8A410380
005C 0  D00E            STO     TEMPQ                                   8A410390
005D 00 4C04007D        BSC   L NORMA,E                                 8A410400
005F 0  C816            LDD     REDBK                                   8A410410
0060 0  D018            STO     AID                                     8A410420
0061 0  18D0            RTE     16                                      8A410430
0062 0  D813            STD     REDBK                                   8A410440
0063 0  70F4            MDX     EXIT                                    8A410450
*********************************************************************** 8A410460
                *                                                       *8A410470
                *             EXIT POINTS TO AUX LOADER                 *8A410480
                *             *************************                 *8A410490
                *                                                       *8A410500
                *             TERMINATE EXIT POINT                      *8A410510
                *                                                       *8A410520
0064 00 65000813 NOTRD  LDX   L2 WWWW                                   8A410530
0066 0  6A9D            STX   2 /04                                     8A410540
0067 0  0806            XIO     CEOFF                                   8A410550
                *                                                       8A410560
                *             NORMAL EXIT POINT                         8A410570
                *                                                       8A410580
0068 00 66000000 SAVE2  LDX   L2 0                                      8A410590
006A 0  70A2            MDX     QQQQ    EXIT TO AUX LOADER              8A410600
*********************************************************************** 8A410610
                *                                                       *8A410620
                *             CONSTANTS AND/OR IOCC WORDS               *8A410630
                *                                                       *8A410640
                                                                        8A410650
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006B 0  0000      TEMPQ DC     /0000                                  8A410660
006C    0000            BSS  E 0                                      8A410670
006C 0  FF00      SENBI DC     /FF00     TERMINATE CONSTANT           8A410680
006D 0  0760            DC     /0760     SENSE CE SWITCHES            8A410690
006E 0  0C00      CEOFF DC     /0C00     SHIFT NORMAL COMP            8A410700
006F 0  0000            DC     /0000     CE OFF IOCC                  8A410710
0070 0  F000      CEON  DC     /F000     CONSTANT                     8A410720
0071 0  0001            DC     /0001     CE ON IOCC                   8A410730
0072 0  7041      DSW   DC     TTTT                                   8A410740
0073 0  0701            DC     /0701     SENSE DSW IOCC               8A410750
0074 0  0079      XIOA  DC     AID                                    8A410760
0075 0  0100            DC     /0100     WRITE IOCC                   8A410770
0076 0  0500      REDBK DC     /0500                                  8A410780
0077 0  0900            DC     /0900                                  8A410790
0078 0  0E00      CALL  DC     /0EC0                                  8A410800
0079 0  0000      AID   DC     /0000     OUTPUT CHARACTER             8A410810
                  *                      * THIS LOCATION MUST         8A410820
                  *                      * BE ODD TO LOAD A+Q         8A410830
                  *                      * THE SAME.                  8A410840
007A 0  0FF0      GTRCH DC     /0FF0                                  8A410850
007B 0  F00F      GBCHA DC     /F00F                                  8A410860
007C 0  0810      AREA  DC     /0810     1ST AREA AND 4TH MOD BIT     8A410870
                  *                      * CHANGE THIS VALUE FOR A    8A410880
                  *                      * 1053 WITH ANOTHER AREA     8A410890
                  *                      * CODE OR MODIFIER BIT.      8A410900
                  ********************************************        8A410910
                  *                                                    8A410920
                  *          PRINT PATTERN ROUTINE                     8A410930
                  *                                                    8A410940
007D 00 65000000  NORMA LDX  L1 0                                     8A410950
007F 0  6907      HOMPA STX   1 HOS+1                                 8A410960
0080 0  C006            LD     HOS+1                                  8A410970
0081 0  6209            LDX  2 0                                      8A410980
0082 0  4804            BSC    E                                      8A410990
0083 0  6208            LDX  2 8                                      8A411000
0084 0  1881            SRT    1                                      8A411010
0085 0  D001            STO    HOS+1                                  8A411020
0086 00 65000086  HOS   LDX  L1 HOS       XR1 HALF COUNT              8A411030
0088 00 C500000+0       LD   L1 STAR                                  8A411040
008A 0  D0EE            STO    AID                                    8A411050
                  *                                                   8A411060
008B 0  F0EF            EOR    GBCHA      TEST FOR GO BACK CHAR       8A411070
008C 00 4C180098        BSC  L GBC,+-     * AND BR IF TRUE            8A411080
                  *                                                   8A411090
008E 0  C0EA            LD     AID                                    8A411100
008F 0  F0EA            EOR    GTRCH      TEST FOR GO THRU CHAR       8A411110
0090 00 4C1800A3        BSC  L GTR,+-     * AND BR IF TRUE            8A411120
                  *                                                   8A411130
0092 0  C0E6            LD     AID                                    8A411140
0093 00 4C1800AE        BSC  L TEC,+-     TERMINATOR BRANCH           8A411150
                  *                                                   8A411160
0095 0  C0E3            LD     AID                                    8A411170
0096 0  1200            SLA  2 0          SHIFT LEFT 0 OR 8           8A411180
0097 0  D0E1            STO    AID                                    8A411190
0098 00 7401007E        MDX  L NORMA+1,1                              8A411200
009A 0  708D            MDX    EXIT                                   8A411210
                  ********************************************        8A411220
                  *                                                   8A411230
                  *          GO BACK ROUTINE                          8A411240
                  *                                                   8A411250
0098 0  C8DD      GBC   LDD    AID                                    8A411260
009C 0  18C8            RTE    8                                      8A411270
009D 00 D5000080        STO  L1 STAR                                  8A411280
009F 00 65000000  POOF  LDX  L1 /0000     PLACE NEW DIST IN XR1       8A411290
00A1 0  69DC            STX    1 NORMA+1                              8A411300
00A2 0  70DC            MDX    HOMPA                                  8A411310
                  ********************************************        8A411320
                  *                                                   8A411330
```



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                  *          GO THRU ROUTINE                          8A411340
                  *                                                   8A411350
00A3 0  C8D5      GTR   LDD    AID                                    8A411360
00A4 0  18C8            RTE    8                                      8A411370
00A5 00 D5000080        STO  L1 STAR                                  8A411380
                  *                                                   8A411390
00A7 00 7402007E        MDX  L NORMA+1,2                              8A411400
00A9 00 6580007E        LDX  I1 NORMA+1                               8A411410
00AB 0  69F4      ABC   STX   1 POOF+1                                8A411420
00AC 0  69D1            STX   1 NORMA+1                               8A411430
00AD 0  70D1            MDX    HOMPA                                  8A411440
                  ********************************************        8A411450
                  *                                                   8A411460
                  *          INITIALIZATION FOR ADDITIONAL            8A411470
                  *          PRINT PATTERNS                           8A411480
                  *                                                   8A411490
00AE 0  6100      TEC   LDX   1 0                                     8A411500
00AF 0  70FB            MDX    ABC                                    8A411510
                  ********************************************        8A411520
00B0 0  8181      STAR  DC     /8181     CR, CR                       8A411530
00B1 0  F00F            DC     /F00F     GO BACK,GO THRU              8A411540
00B2 0  3C3E            DC     /3C3E     A                            8A411550
00B3 0  181A            DC     /181A     B                            8A411560
00B4 0  1C1E            DC     /1C1E     C                            8A411570
00B5 0  3032            DC     /3032     D                            8A411580
00B6 0  3436            DC     /3436     E                            8A411590
00B7 0  1012            DC     /1012     F                            8A411600
00B8 0  1416            DC     /1416     G                            8A411610
00B9 0  2426            DC     /2426     H                            8A411620
00BA 0  2022            DC     /2022     I                            8A411630
00BB 0  7C7E            DC     /7C7E     J                            8A411640
00BC 0  585A            DC     /585A     K                            8A411650
00BD 0  5C5E            DC     /5C5E     L                            8A411660
00BE 0  7072            DC     /7072     M                            8A411670
00BF 0  7476            DC     /7476     N                            8A411680
00C0 0  5052            DC     /5052     O                            8A411690
00C1 0  5456            DC     /5456     P                            8A411700
00C2 0  6466            DC     /6466     Q                            8A411710
00C3 0  6062            DC     /6062     R                            8A411720
00C4 0  989A            DC     /989A     S                            8A411730
00C5 0  9C9E            DC     /9C9E     T                            8A411740
00C6 0  B0B2            DC     /B0B2     U                            8A411750
00C7 0  B4B6            DC     /B4B6     V                            8A411760
00C8 0  9092            DC     /9092     W                            8A411770
00C9 0  9496            DC     /9496     X                            8A411780
00CA 0  A4A6            DC     /A4A6     Y                            8A411790
00CB 0  A0A2            DC     /A0A2     Z                            8A411800
00CC 0  FCFE            DC     /FCFE     1                            8A411810
00CD 0  D8DA            DC     /D8DA     2                            8A411820
00CE 0  DCDE            DC     /DCDE     3                            8A411830
00CF 0  F0F2            DC     /F0F2     4                            8A411840
00D0 0  F4F6            DC     /F4F6     5                            8A411850
00D1 0  D0D2            DC     /D0D2     6                            8A411860
00D2 0  D4D6            DC     /D4D6     7                            8A411870
00D3 0  E4E6            DC     /E4E6     8                            8A411880
00D4 0  E0E2            DC     /E0E2     9                            8A411890
00D5 0  C4C6            DC     /C4C6     0                            8A411900
00D6 0  C0C2            DC     /C0C2     =                            8A411910
00D7 0  BCBE            DC     /BCBE     /                            8A411920
00D8 0  8486            DC     /8486     -                            8A411930
00D9 0  8082            DC     /8082     .                            8A411940
00DA 0  F00F            DC     /F00F     GO BACK,GO THRU              8A411950
00DB 0  5E20            DC     /5E20     L,I                          8A411960
00DC 0  7434            DC     /7434     N,E                          8A411970
00DD 0  0312            DC     /0312     LINE FEED,F                  8A411980
00DE 0  3434            DC     /3434     E,E                          8A411990
00DF 0  3081            DC     /3081     D,CR RETURN                  8A412000
00E0 0  F00F            DC     /F00F     GO BACK,GO THRU              8A412010
```

AUX 1053 EXERCISER
4TH CHAR AND CTRL EXERCISER

```
00E1 0  9E3C            DC      /9E3C       T,A                         8A412020
00E2 0  1841            DC      /1841       B,TAB CHAR                  8A412030
00E3 0  4409            DC      /4409       +,SH RED                    8A412040
00E4 0  4605            DC      /4605        ,SH BLK                    8A412050
00E5 0  4009            DC      /4009       $,SH RED                    8A412060
00E6 0  4205            DC      /4205        ,SH BLK                    8A412070
00E7 0  0409            DC      /0409       ',SH RED                    8A412080
00E8 0  0605            DC      /0605        ,SH BLK                    8A412090
00E9 0  0009            DC      /0009       -,SH RED                    8A412100
00EA 0  0205            DC      /0205        ,SH BLK                    8A412110
00EB 0  2181            DC      /2181       SPACE,CR RETURN             8A412120
00EC 0  F00F            DC      /F00F       GO BACK,GO THRU             8A412130
00ED 0  411A            DC      /411A       TAB CHAR,B                  8A412140
00EE 0  3C1C            DC      /3C1C       A,C                         8A412150
00EF 0  5821            DC      /5821       K,SPACE                     8A412160
00F0 0  9A21            DC      /9A21       S,SPACE                     8A412170
00F1 0  5421            DC      /5421       P,SPACE                     8A412180
00F2 0  3C21            DC      /3C21       A,SPACE                     8A412190
00F3 0  1C21            DC      /1C21       C,SPACE                     8A412200
00F4 0  3421            DC      /3421       E,SPACE                     8A412210
00F5 0  2203            DC      /2203       I,LF                        8A412220
00F6 0  1174            DC      /1174       BK SP,N                     8A412230
00F7 0  0311            DC      /0311       LF,BK SP                    8A412240
00F8 0  3003            DC      /3003       D,LF                        8A412250
00F9 0  1134            DC      /1134       BK SP,E                     8A412260
00FA 0  0311            DC      /0311       LF,BK SP                    8A412270
00FB 0  9681            DC      /9681       X,CR RETURN                 8A412280
00FC 0  F00F            DC      /F00F       GO BACK,GO THRU             8A412290
00FD 0  0000            DC      /0000       TERMINATOR                  8A412300
                *                                                       8A412310
000D            QQQQ    EQU     /D          GO TO LOADEP AT /D          8A412320
70D7            NNNN    EQU     /70D7       FOR CARD LOADER AT /35      8A412330
0813            WWWW    EQU     /0813       SET IN LOADER AT /04        8A412340
7041            TTTT    EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO    8A412350
                *                           THE BRANCH FROM THE LOADER  8A412360
                *                           TO RETUR IN THIS PROGRAM.   8A412370
                ********************************************************* 8A412380
00FE    00FD            END     *-1         END CARD NEVER USED         8A412390
```


AUX 1053 EXERCISER
4TH CHAR AND CTRL EXERCISER

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
ABC	00AB	00AF
AID	0079	0048,0060,0074,008A,008E,0092,0095,0097,009B,00A3
AREA	007C	0042
BUILD	0041	0045
CALL	0078	0052
CEOFF	006E	0041,0043,0055,0067
CEON	0070	0046,004F,005B
DSW	0072	003E,0048
EXIT	0058	0063,009A
GBC	009B	008C
GBCHA	007B	008B
GTR	00A3	0C90
GTRCH	007A	008F
HOMPA	007F	00A2,00AD
HOS	0086	007F,0080,0085,0086
LUMP	005A	0056
NNNN	70D7	003B
NORMA	007D	0053,005D,0098,00A1,00A7,00A9,00AC
NOTRD	0064	004D
POOF	009F	00AB
QQQQ	000D	006A
REDBK	0076	005F,0062
RETUR	0046	00FE
SAVE2	0068	0047,0050,0059
SENBI	006C	0049,004C
STAR	0080	0088,009D,00A5
TEC	00AE	0093
TEMPQ	0068	005A,005C
TTTT	7041	0072
WWWW	0813	0064
XIOA	0074	0058

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1. PURPOSE

THE MAIN PURPOSE OF THE AUX 1627 REGISTRATION EXERCISER PROGRAM IS TO TEST VARIOUS MOVEMENTS OF THE PLOTTER USING THE CE PROGRAM SWITCHES TO INITIATE COMMANDS. IN ADDITION, THE GENERAL MECHANICAL PERFORMANCE OF THE PLOTTER MAY BE TESTED BY SELECTING A REGISTRATION-PATTERN ROUTINE.

2. REQUIREMENTS

2.1 DEVICE AREA CODE

IF THE DEVICE TO BE TESTED USES A CUSTOMER ASSIGNED AREA CODE, A NEW AUX PROGRAM DECK OR PAPER TAPE MUST BE CREATED. THE PROCEDURE IS PRESENTED IN THE DOCUMENTATION OF THE AUX PROGRAM GENERATOR UTILITY (PID 08AC - CARD VERSION, PID 08AD - PAPER TAPE VERSION) THE PROGRAM LOCATIONS THAT MUST BE ALTERED ARE SPECIFIED BY A STATEMENT AT THE BEGINNING OF THE PROGRAM LISTING.

2.2 CARD INPUT

THE AUX DIAGNOSTIC LOADER (PID 08A1) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PROGRAM DECK CAN BE LOADED.

2.3 PAPER TAPE INPUT

THE AUX DIAGNOSTIC LOADER (PAPER TAPE - PID 08A0) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PAPER TAPE PROGRAM CAN BE LOADED.

3. USE PROCEDURES

BEFORE PROCEEDING, A PROGRAM MUST BE IN MAIN-CORE STORAGE RUNNING OR AT A WAIT INSTRUCTION READY TO START RUNNING.

3.1 CARD INPUT LOADING PROCEDURE

A. BE SURE THE 1442 IS AVAILABLE AND ALL CARDS ARE REMOVED.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT TWO TIMES TO ASSURE THE 1442 IS IN CE MODE.
D. PLACE THE SEVEN CARDS OF THE AUX 1627 EXERCISER PROGRAM IN THE HOPPER OF THE 1442 AND FOLLOW WITH A BLANK CARD.

NOTE

EACH PROGRAM CARD HAS A CHARACTER ENTERED INTO COLUMN 80. THIS CHARACTER DEFINES THE CARD'S POSITION IN THE DECK ACCORDING TO THE FOLLOWING SEQUENCE, X(FIRST), THEN 0, 1, 2, 3, 4, AND 5. THE CARDS CANNOT BE READ UNLESS THEY ARE PLACED IN THE HOPPER IN THE CORRECT ORDER.

E. DEPRESS THE 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
F. SET POWER ON/OFF SWITCH OF 1627 PLOTTER TO ON.
G ENSURE THAT A CLEAR PLOTTING SPACE IS AVAILABLE ABOVE THE HORIZONTAL PEN-CARRIAGE RAILS.
H. SELECT THE DESIRED ROUTINE FROM TABLE 1.
I. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO LOAD THE PROGRAM. (IF THE HOPPER OF THE 1442 DOES NOT GO EMPTY THE CHECK-SUM ROUTINE IN THE AUX DIAGNOSTIC LOADER MOST LIKELY REJECTED THE PROGRAM. CHECK THE CARDS FOR PROPER SEQUENCE AND RETURN TO STEP A AND TRY AGAIN).
J. GO TO SECTION 3.3

3.2 PAPER TAPE INPUT LOADING PROCEDURE

A. BE SURE THAT THE 1054 TAPE READER IS AVAILABLE AND THAT THERE IS NO TAPE IN THE READER.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT PUSHBUTTON TWO TIMES TO ASSURE THAT THE 1054 IS PLACED IN CE MODE.
D. PLACE THE FIRST TAPE CHARACTER OF THE PROGRAM DIRECTLY ABOVE THE SENSE PINS IN THE 1054 READER. (THE CHECK-SUM ROUTINE OF THE AUX DIAGNOSTIC LOADER WILL REJECT THE PROGRAM IF THE AUX TAPE IS LOADED INCORRECTLY).
E. SET POWER ON/OFF SWITCH OF 1627 PLOTTER TO ON.
F. ENSURE THAT A CLEAR PLOTTING SPACE IS AVAILABLE ABOVE THE HORIZONTAL PEN-CARRIAGE RAILS.
G. SELECT THE DESIRED ROUTINE FROM TABLE 1.
H. DEPRESS CE LEVEL INTERRUPT TO LOAD THE PROGRAM. TAPE ACTION SHOULD START AND CONTINUE UNTIL THE ENTIRE AUX PROGRAM HAS BEEN READ. WHEN THE READER STOPS, THE FIRST TAPE FEED HOLE CHARACTER FOLLOWING THE AUX PROGRAM DATA SHOULD BE LOCATED DIRECTLY ABOVE THE 1054 SENSE PINS FOR A CORRECTLY STORED PROGRAM. IF THE TAPE DID NOT STOP AT SAID LOCATION, RETURN TO STEP A TO RELOAD PROG.

3.3 TYPICAL PROGRAM OPERATING PROCEDURE

THE ROUTINE SELECTED WILL AUTOMATICALLY START AFTER THE PROGRAM HAS BEEN ENTERED INTO AUXILIARY STORAGE. SUBSEQUENT ROUTINES MAY BE SELECTED AT ANY TIME USING THE SWITCH SETTINGS LISTED IN TABLE 1.

TABLE 1. CE PROGRAM SWITCH SETTINGS

ROUTINE	SWITCHES 8 9 10 11 12 13 14 15	FUNCTION
REGISTRATION TEST	0 0 0 0 0 0 0 0	THIS SWITCH SETTING INITIATES A ROUTINE THAT CAUSES A REGISTRATION-TEST PATTERN TO BE PLOTTED. (SEE SECT. 5.1 FOR DETAILS OF THE PLOTTING ROUTINE.) THIS ROUTINE WILL CONTINUE UNTIL ANOTHER ROUTINE IS SELECTED.
SELECT COMMAND PEN DOWN..... DRUM DOWN..... DRUM UP..... CARRIER RIGHT..... CARRIER LEFT..... PEN UP.....	X X X X X X 0 1	THIS SWITCH SETTING INITIATES A ROUTINE THAT PLACES THE INFORMATION CONTAINED IN THE CE PROGRAM SWITCHES 8 THRU 13 INTO AN XIO COMMAND WORD. AN XIO WRITE COMMAND IS THEN ISSUED. ANY COMBINATION OF COMMANDS CAN BE SELECTED SIMULTANEOUSLY. IF THE FIRST SIX BIT SWITCHES ARE OFF, A PROGRAMMED PEN-UP COMMAND IS GIVEN TO AVOID LOSING THE PLOTTER INTERRUPT. THE ROUTINE IS REPEATED UNTIL ANOTHER ROUTINE IS SELECTED.
INITIALIZE REGISTRATION TEST	0 0 0 0 0 0 1 0	THIS SWITCH SETTING STOPS WHATEVER ROUTINE IS IN PROGRESS AND INITIALIZES AND STARTS THE REGISTRATION-TEST ROUTINE. THE INITIALIZE-REGISTRATION-TEST ROUTINE IS INTERLOCKED WITH THE REGISTRATION-TEST ROUTINE. THUS, AFTER THE ROUTINE IS FIRST ENTERED, THE PROGRAM FLOW IS IDENTICAL TO THE FLOW OF THE REGISTRATION-TEST ROUTINE. IN ORDER TO RESELECT THE INITIALIZE-REGISTRATION-TEST ROUTINE, THE CE PROGRAM SWITCHES MUST BE FIRST SET TO 00000000 (REGISTRATION-TEST ROUTINE) AND THEN SET TO 00000010 (INITIALIZE-REGISTRATION-TEST ROUTINE). THIS ROUTINE WILL CONTINUE UNTIL ANOTHER ROUTINE IS SELECTED.
CE SERVICE STOP	0 0 0 0 1 1 1 1	THIS SWITCH SETTING CAUSES THE 1627 PLOTTER TO STOP PLOTTING BUT DOES NOT TERMINATE THE DIAGNOSTIC PROGRAM. THIS ROUTINE ALLOWS MECHANICAL ADJUSTMENTS TO BE MADE TO THE 1627 PLOTTER. TO RESTART THE PLOTTER, SELECT A DESIRED TEST ROUTINE AND DEPRESS THE CE LEVEL INTERRUPT PUSHBUTTON.
PROGRAM TERMINATOR	1 1 1 1 1 1 1 1	THIS SWITCH SETTING INITIATES A ROUTINE THAT TERMINATES THE 1627 PLOTTER REGISTRATION AUXILIARY-STORAGE DIAGNOSTIC PROGRAM. THIS SWITCH SETTING MUST ALWAYS BE USED UPON COMPLETION OF THE SERVICE CALL TO RELEASE THE DEVICE TO THE CUSTOMER.
CAUTION		FOLLOW THE TERMINATING PROCEDURE IN SECTION 3.5 .

3.4 CE SERVICE STOPS

THIS STOP IS RECOMMENDED WHEN MAKING ADJUSTMENTS. THE PROGRAM WILL NOT BE TERMINATED.

3.5 TERMINATING PROCEDURE

TO TERMINATE THE PROGRAM AND RETURN THE DEVICE TO THE CUSTOMER-

A. SET THE CE PROGRAM SWITCHES TO 00001111 -CE SERVICE STOP. (THE ONLY REASON FOR USING THIS SETTING IS TO STOP ANY DEVICE ACTION WHICH MAY CAUSE AN INTERRUPT).
B. SET THE CE PROGRAM SWITCHES TO 11111111 -TERMINATOR SETTING, AND DEPRESS THE CE INTERRUPT LEVEL BUTTON ONCE AND ONLY ONCE. (A SECOND DEPRESSION OF THE CE INT. KEY WILL RESULT IN THE AUX DIAGNOSTIC LOADER TRYING TO LOAD A NEW PROGRAM IF THE READER IS READY.)

NOTE

TO OFFSET THE POSSIBILITY THAT THE INPUT DEVICE MIGHT BE MALFUNCTIONING THE NEXT TIME THE 1800 SYSTEM NEEDS SERVICING THE FOLLOWING PROGRAM SHOULD BE LOADED INTO AUX CORE AT THE CONCLUSION OF EACH SERVICE CALL -

A. CARD INPUT

LOAD THE AUX 1442 PACKED READ EXERCISE PROGRAM (PID 08AA) AFTER ASSURING THE PROGRAM IS BY PUNCHING CARDS, CE SWITCH SETTING 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING, TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

B. TAPE INPUT

LOAD THE AUX 1054/55 EXERCISE PROGRAM (PID 08A8). AFTER ASSURING THE PROGRAM IS IN BY PUNCHING TAPE, CE SWITCH SETTINGS 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

4. PRINTOUTS

THE PRINTOUT OF THE REGISTRATION-TEST ROUTINE IS SHOWN IN FIGURE 1. THIS PRINTOUT IS PRODUCED BY PLOTTING + FIGURES AS THE CARRIAGE MOVES LEFT TO RIGHT AND PLOTTING X FIGURES ON TOP OF THE + FIGURES AS THE CARRIER MOVES RIGHT TO LEFT. THE PEN IS RAISED AFTER PLOTTING EACH SEGMENT OF THE FIGURE, RETURNED TO THE CENTER OF THE FIGURE, AND LOWERED TO START A NEW SEGMENT.

5. COMMENTS

A PROGRAM MUST BE IN MAIN-CORE STORAGE AND MUST BE RUNNING OR READY TO START BEFORE THIS PROGRAM CAN BE LOADED. ASSUMING THAT, (1) THE AUX DIAGNOSTIC LOADER IS PRESENT IN AUXILIARY-CORE STORAGE, (2) THE PROGRAM IS IN THE READER AND READY TO BE READ, AND (3) A ROUTINE HAS BEEN SELECTED, DEPRESSING THE CE LEVEL INTERRUPT PUSHBUTTON CAUSES THE PROGRAM TO BE STORED AND STARTED. AFTER STARTING, THE PROGRAM SETS THE 1627 PLOTTER TO THE CE MODE. TO DETERMINE THE ROUTINE THAT IS SELECTED, THE PROGRAM SENSES THE DSW AND THE CE PROGRAM SWITCHES. IF A PROGRAM TERMINATOR IS SENSED, A TRANSFER-VECTOR ADDRESS IN THE LOADER PROGRAM IS RESTORED TO ITS ORIGINAL CONTENTS. IN ADDITION, THE CE MODE OF THE 1627 PLOTTER IS TURNED OFF, AND CONTROL IS RETURNED TO THE CUSTOMER'S MAINLINE PROGRAM. IF A PROGRAM TERMINATOR IS NOT SENSED, THE PROGRAM SENSES FOR A CE SERVICE STOP ROUTINE. IF CE SERVICE STOP IS SELECTED, CONTROL IS RETURNED TO THE CUSTOMER'S MAINLINE PROGRAM. IF CE SERVICE STOP IS NOT SELECTED, THE PROGRAM EXECUTES ONE OF THE ROUTINES DISCUSSED IN THE FOLLOWING PARAGRAPHS.

5.1 REGISTRATION-TEST ROUTINE

TO ESTABLISH A STARTING POINT FOR THE FIRST + FIGURE, THE PROGRAM WILL RAISE AND MOVE THE PEN 1/2 INCH FROM THE LEFT SIDE, AND MOVE THE PAPER UP 1/2 INCH. THE ROUTINE THEN GENERATES COMMANDS FROM A COMMAND GENERATOR TO PRODUCE THE FIRST + FIGURE. THE COMMANDS ARE GENERATED IN THE FOLLOWING ORDER,

A. LOWER AND MOVE PEN LEFT 1/4 INCH.
B. RAISE AND MOVE PEN RIGHT 1/4 INCH.
C. LOWER PEN AND MOVE DRUM UP 1/4 INCH.
D. RAISE PEN AND MOVE DRUM DOWN 1/4 INCH.
E. LOWER AND MOVE PEN RIGHT 1/4 INCH.
F. RAISE AND MOVE PEN LEFT 1/4 INCH.
G. LOWER PEN AND MOVE DRUM DOWN 1/4 INCH.
H. RAISE PEN AND MOVE DRUM UP 1/4 INCH.

AFTER THE LAST COMMAND HAS BEEN EXECUTED AND THE + FIGURE IS COMPLETED, THE ROUTINE DETERMINES WHETHER 21 + FIGURES HAVE BEEN GENERATED. IF NOT, THE CENTER OF THE NEXT + FIGURE IS LOCATED BY RAISING AND MOVING THE PEN RIGHT 1/2 INCH. WHEN THE CENTER OF THE FIGURE IS LOCATED, THE NEXT + FIGURE IS PLOTTED IN THE SAME MANNER AS THE FIRST. AFTER 21 + FIGURES ARE PLOTTED, THE PROGRAM SETS UP AN X-FIGURE COMMAND GENERATOR. THESE X FIGURES ARE SUPERIMPOSED ON THE + FIGURES AND ARE DRAWN FROM RIGHT TO LEFT IN A MANNER SIMILAR TO THAT WHICH IS USED TO PLOT + FIGURES. THE COMMANDS REQUIRED TO PRODUCE EACH X FIGURE ARE GENERATED IN THE FOLLOWING ORDER

A. LOWER PEN, MOVE PEN RIGHT, AND MOVE DRUM UP.
B. RAISE PEN, MOVE PEN LEFT, AND MOVE DRUM DOWN.
C. LOWER PEN, MOVE PEN LEFT, AND MOVE DRUM UP.
D. RAISE PEN, MOVE PEN RIGHT, AND MOVE DRUM DOWN.
E. LOWER PEN, MOVE PEN LEFT, AND MOVE DRUM DOWN.
F. RAISE PEN, MOVE PEN RIGHT, AND MOVE DRUM UP.
G. LOWER PEN, MOVE PEN RIGHT, AND MOVE DRUM DOWN.
H. RAISE PEN, MOVE PEN LEFT, AND MOVE DRUM UP.

AFTER 21 X FIGURES ARE PLOTTED, THE ROUTINE CLEARS 1/2 INCH OF PAPER, AND + FIGURES ARE AGAIN PLOTTED. THE REGISTRATION-TEST ROUTINE IS REPEATED UNTIL A NEW ROUTINE IS SELECTED.

5.2 INITIALIZE-REGISTRATION-TEST ROUTINE

THE INITIALIZE-REGISTRATION-TEST ROUTINE STOPS WHATEVER ROUTINE IS IN PROGRESS AND INITIALIZES AND STARTS THE REGISTRATION-TEST ROUTINE. THE INITIALIZE-REGISTRATION-TEST ROUTINE IS INTERLOCKED WITH THE REGISTRATION-TEST ROUTINE SO THAT AFTER THE ROUTINE IS FIRST ENTERED, THE PROGRAM FLOW IS IDENTICAL WITH THE FLOW OF THE REGISTRATION-TEST ROUTINE. IN ORDER TO REPEAT THE INITIALIZE-REGISTRATION ROUTINE, THE REGISTRATION-TEST ROUTINE MUST BE SELECTED FIRST BEFORE THE INITIALIZE-REGISTRATION ROUTINE.

5.3 SELECT-COMMAND ROUTINE

THE SELECT-COMMAND ROUTINE PLACES THE INFORMATION CONTAINED IN CE PROGRAM SWITCHES 8 THRU 13 INTO AN XIO COMMAND WORD AND THEN EXECUTES AN XIO WRITE INSTRUCTION. THE ROUTINE IS REPEATED UNTIL ANOTHER ROUTINE IS SELECTED. ANY COMBINATION OF COMMANDS CAN BE SELECTED SIMULTANEOUSLY. IF CE PROGRAM SWITCHES 8 THRU 13 ARE ALL OFF, A PROGRAMMED PEN-UP COMMAND IS GIVEN TO AVOID LOSING THE PLOTTER INTERRUPT.

6. APPENDIX

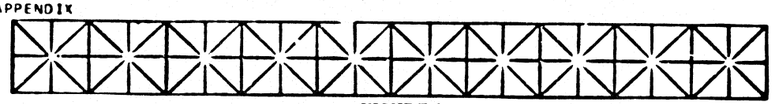

FIGURE 1
SAMPLE PLOT

F
L

```
                        ABS
028C                    ORG     /36                                     8A600000
                                                                        8A600010
                    ********************************************        8A600020
                    *                                                   8A600030
                    *       IF THIS PROG IS TO BE USED FOR A MACHINE    8A600040
                    * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH     8A600050
                    * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST   8A600060
                    * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A     8A600070
                    * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG     8A600080
                    * GENERATOR WRITE-UP FOR PROCEDURE.                 8A600090
                    *                                                   8A600100
                    ********************************************        8A600110
                    *                                                   8A600120
                    *                                                   8A600130
                    *                                                   8A600140
                    *           PLOTTER REGISTRATION AND                8A600150
                    *           * PEN UP/DOWN TEST                      8A600160
                    *           ************************                8A600170
                    *                                                   8A600180
                    * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE   8A600190
                    *                                                   8A600200
                    *                                                   8A600210
                    *           CE SWITCH SETTINGS                      8A600220
                    *                                                   8A600230
                    *           XXXXXXX0    REGISTRATION TEST           8A600240
                    *           XXXXXX10    INITALIZE REGISTRATION      8A600250
                    *                       * TEST. SW TO XXXXXX00      8A600260
                    *                       * AFTER TEST STARTS         8A600270
                    *           XXXX1111    CE SERVICE STOP             8A600280
                    *           11111111    TERMINATE RUN               8A600290
                    *           CCCCCC01    SELECT COMMANDS BY          8A600300
                    *           123456      * BIT SW SETTINGS           8A600310
                    *  PEN DOWN 1 23456     * AS SHOWN                  8A600320
                    *  DRUM DOWN 22 3456    * IF ALL COMMAND BITS ARE   8A600330
                    *    DRUM UP 333 456    * FOUND TO BE OFF A         8A600340
                    * CARRIER RT 4444 56    * PROGRAMMED PEN UP         8A600350
                    * CARRIER LT 55555 6    * COMMAND WILL BE GIVEN     8A600360
                    *     PEN UP 666666     * TO AVOID LOSING           8A600370
                    *                       * PLOTTER INTERRUPT         8A600380
                    *                                                   8A600390
                    *           NOTE    THE X SYMBOL MEANS              8A600400
                    *                   * DOES NOT MATTER               8A600410
                    *                                                   8A600420
                    *                                                   8A600430
                    * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION   8A600440
                    * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.         8A600450
                    ********* ***********************************       8A600460
                    *                                                   8A600470
                    *           AUX PROG ENTRY POINTS                   8A600480
                    *           *********************                   8A600490
                    *                                                   8A600500
                    *           1ST PASS ENTRY                          8A600510
                    *                                                   8A600520
                    * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN  8A600530
                    * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER       8A600540
                    *                                                   8A600550
0036 0  1000            NOP             NO OPERATION                    8A600560
0037 0  1000            NOP             NO OPERATION                    8A600570
0038 0  1000            NOP             NO OPERATION                    8A600580
0039 0  1000            NOP             NO OPERATION                    8A600590
003A 0  1000            NOP             NO OPERATION                    8A600600
003B 0  1000            NOP             NO OPERATION                    8A600610
003C 0  C027            LD      CEOFF   RESTORE LOC NICE                8A600620
003D 0  D0F7            STO     /35     * IN AUX LOADER                 8A600630
                    *                                                   8A600640
003E 0  C027            LD      CEON    PLACE BRANCH                    8A600650
003F 0  D0C4            STO     /04     * TO RETUR LABEL                8A600660
                    ********************************************        8A600670
```



```
                    *                                                   8A600680
                    *           ADD AREA CODE TO THE I/O COMMANDS       8A600690
                    *                                                   8A600700
0040 0  6107            LDX   1 7                                       8A600710
0041 0  C164        BUILD LD    1 CEOFF     GET IOCC WORD AND           8A600720
0042 0  E81E            OR      AREA        * OR IN AREA AND            8A600730
0043 0  D164            STO   1 CEOFF       * PLACE BACK                8A600740
0044 0  71FE            MDX   1 -2                                      8A600750
0045 0  70F8            MDX     BUILD                                   8A600760
                    *                                                   8A600770
                    *           ALL BUT 1ST PASS ENTRY POINT            8A600780
                    *                                                   8A600790
0046 0  081F        RETUR XIO     CEON                                  8A600800
0047 0  6A41            STX   2 SAVE2+1                                 8A600810
0048 0  6B42            STX   3 SAVE3+1                                 8A600820
0049 0  081E            XIO     DSW         SENSE DEVICE STATUS         8A600830
004A 0  0817            XIO     SENBI       SENSE CE SW TO ACCUM        8A600840
004B 0  E016            AND     SENBI       BLOCK OUT PROG SEL SW       8A600850
004C 0  D018            STO     DSW                                     8A600860
004D 0  F014            EOR     SENBI                                   8A600870
004E 00 4C180083        BSC   L NOTRD,+-     BR OUT OF PROGRAM           8A600880
                    *                                                   8A600890
0050 00 65000001    XX1 LDX   L1 1                                      8A600900
0052 00 66000000    XX2 LDX   L2 0                                      8A600910
0054 0  C013            LD      DSW                                     8A600920
0055 0  1882            SRT     2                                       8A600930
0056 0  1010            SLA     16                                      8A600940
0057 0  1082            SLT     2                                       8A600950
0058 0  D001            STO     CAM+1                                   8A600960
0059 00 67000000    CAM LDX   L3 0                                      8A600970
005B 00 4F80005D        BSC   I3 KALS                                   8A600980
                    ********************************************        8A600990
005D 0  0099        KALS  DC      QSA         REGISTRATION TEST         8A601000
005E 0  008D          DC      COMAD       SELECT COMMAND              8A601010
005F 0  0075          DC      INIT        INIT REGISTRATION TEST      8A601020
0060 0  0088          DC      SAVE2       CE SERVICE STOP             8A601030
                    *                                                   8A601040
                    ********************************************        8A601050
0061 0  2800        AREA  DC      /2800       1ST 1627 AREA CODE        8A601060
                    *                         * CHANGE THIS VALUE FOR   8A601070
                    *                         * A DEVICE ON ANOTHER AREA 8A601080
                    ********************************************        8A601090
                    *                                                   8A601100
                    *           CONSTANTS AND/OR IOCC WORDS             8A601110
0062    0000        BSS   E 0                                           8A601120
0062 0  00FF        SENBI DC      /00FF       TERMINATE CONSTANT        8A601130
0063 0  0760          DC      /0760       SENSE CE SWITCHES           8A601140
0064 0  70D7        CEOFF DC      NNNN                                  8A601150
0065 0  0000          DC      /0000       CE OFF IOCC                 8A601160
0066 0  7041        CEON  DC      TTTT                                  8A601170
0067 0  0001          DC      /0001       CE ON IOCC                  8A601180
0068 0  0000        DSW   DC      /0000                                 8A601190
0069 0  0701          DC      /0701       PLOTTER DSW                 8A601200
006A 0  0068        WORKQ DC      DSW                                   8A601210
006B 0  0100          DC      /0100       IOCC WORD WR PLOT           8A601220
006C    0000          BSS   E 0                                         8A601230
006C 0  8000        PEEUD DC      /8000                                 8A601240
006D 0  0400          DC      /0400                                   8A601250
006E 0  A409        WORDR DC      /A409                                 8A601260
006F 0  4210          DC      /4210                                   8A601270
0070 0  2D34        XXXX  DC      /2D34                                 8A601280
0071 0  D2CB          DC      /D2CB                                   8A601290
0072 0  0008        FLUTE DC      8                                     8A601300
0073 0  0015          DC      21                                      8A601310
0074 0  7025          MDX     HOUT-1                                  8A601320
0075 0  1000        INIT  NOP             NO OP OR MDX TO HOUT        8A601330
0076 0  6100          LDX   1 0                                       8A601340
0077 0  6200          LDX   2 0                                       8A601350
```

AUX 1627 REGISTRATION EXERCISER

```
0078 0  C8F3            LDD     PEEUD                                   8A601360
0079 0  D83E            STD     PENUH                                   8A601370
007A 0  C8F3            LDD     WORDR                                   8A601380
007B 0  D844            STD     WORDQ                                   8A601390
007C 0  C8F3            LDD     XXXX                                    8A601400
007D 0  D862            STD     XXX                                     8A601410
007E 0  C8F3            LDD     FLUTE                                   8A601420
007F 0  D844            STD     FLOUT                                   8A601430
0080 0  C0F3            LD      INIT-1                                  8A601440
0081 0  D0F3            STO     INIT                                    8A601450
0082 0  7026            MDX     DISPA                                   8A601460
                *****************************************               8A601470
                *                                                       8A601480
                *           EXIT POINTS TO AUX LOADER                   8A601490
                *           *************************                   8A601500
                *                                                       8A601510
                *           TERMINATE EXIT POINT                        8A601520
                *                                                       8A601530
0083 00 65000813 NOTRD LDX  L1 WWWW                                     8A601540
0085 00 6D000004       STX  L1 /04                                      8A601550
0087 0  08DC           XIO      CEOFF                                   8A601560
                *                                                       8A601570
                *           NORMAL EXIT POINT                           8A601580
                *                                                       8A601590
0088 00 66000000 SAVE2 LDX  L2 0                                        8A601600
008A 00 67000000 SAVE3 LDX  L3 0                                        8A601610
008C 0  7080           MDX      QQQQ        EXIT TO AUX LOADER         8A601620
                *****************************************               8A601630
                *                                                       8A601640
                *           SELECTED COMMAND ROUTINE                    8A601650
                *                                                       8A601660
008D 0  C0DA    COMAD  LD       DSW                                     8A601670
008E 0  1801           SRA      1                                       8A601680
008F 00 4C180094       BSC  L   PPPPP,+-    BR NO COMMAND              8A601690
0091 0  1009           SLA      9                                       8A601700
0092 0  D0D5    FOX    STO      DSW                                     8A601710
0093 0  700D           MDX      EXIT                                    8A601720
0094 0  C018    PPPPP  LD       PENUU+1                                 8A601730
0095 0  70FC           MDX      FOX                                     8A601740
                *****************************************               8A601750
                *                                                       8A601760
                *           OUTPUT TABLE                                8A601770
                *                                                       8A601780
0096    0000           BSS  E   0                                       8A601790
0096 0  0001    COUNT  DC       1           OUTPUT GROUP COUNTER        8A601800
0097 0  0400    OUTAR  DC       /0400       OUTPUT CHARACTER            8A601810
0098 0  0000           DC       /0000       TERM TEST FOR ZERO          8A601820
                *                                                       8A601830
                *                                                       8A601840
                *           OUTPUT ROUTINE                              8A601850
                *           **************                              8A601860
                *                                                       8A601870
0099 0  C01B    QSA    LD       NOP                                     8A601880
009A 0  D0DA           STO      INIT                                    8A601890
                *                                                       8A601900
009B 00 C6C00097 HOUT  LD   L2  OUTAB                                   8A601910
009D 00 4C1800A5       BSC  L   STEPC,+-    BR NO CHAR AT THIS         8A601920
                *                            * TABLE LOCATION           8A601930
009F 0  D0C8           STO      DSW                                     8A601940
00A0 0  7201           MDX   2  1                                       8A601950
                *                                                       8A601960
00A1 0  08C8    EXIT   XIO      WORKQ                                   8A601970
00A2 0  69AE           STX   1  XX1+1                                   8A601980
00A3 0  6AAF           STX   2  XX2+1                                   8A601990
00A4 0  70E3           MDX      SAVE2                                   8A602000
                *****************************************               8A602010
                *                                                       8A602020
00A5 0  6200    STEPC  LDX   2  0                                       8A602030
```

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```
00A6 00 74FF0096        MDX  L  COUNT,-1                                8A602040
00A8 0  70F2            MDX     HOUT                                    8A602050
                *                                                       8A602060
                *           DISPATCHER ROUTINE                          8A602070
                *           ****** ***********                          8A602080
                *                                                       8A602090
00A9 0  7101    DISPA  MDX   1  1                                       8A602100
00AA 00 4D8000F0       BSC  I1 DISP        BRANCH TO NEXT ROUTIN       8A602110
                *****************************************               8A602120
                *                                                       8A602130
                *           PEN UP ROUTINE                              8A602140
                *           **************                              8A602150
                *                                                       8A602160
00AC    0000           BSS  E  0                                        8A602170
00AC 0  0001    PENUU  DC       /0001       COUNT OF ONE                8A602180
00AD 0  0400           DC       /0400       PEN UP WORD                 8A602190
                *                                                       8A602200
00AE 0  C8FD    PENUP  LDD      PENUU                                   8A602210
00AF 0  700E           MDX      PFOMP                                   8A602220
                *****************************************               8A602230
                *                                                       8A602240
                *           UP 50 ROUTINE                               8A602250
                *           *************                               8A602260
                *                                                       8A602270
0080    0000           BSS  E   0                                       8A602280
0080 0  0032    PP50   DC       50          COUNT                       8A602290
0081 0  4000           DC       /4000       UP COMMAND                  8A602300
                *                                                       8A602310
0082 0  C8FD    UP50   LDD      PP50                                    8A602320
0083 0  700A           MDX      PFOMP                                   8A602330
                *****************************************               8A602340
                *                                                       8A602350
                *                                                       8A602360
                *           RIGHT 50 ROUTINE                            8A602370
                *           ****************                            8A602380
                *                                                       8A602390
0084    0000           BSS  E   0                                       8A602400
0084 0  0032    RIK50  DC       50          COUNT                       8A602410
0085 0  1000    NOP    DC       /1000       RIGHT COMMAND               8A602420
                *                                                       8A602430
0086 0  C8FD    RIG50  LDD      RIK50                                   8A602440
0087 0  7006           MDX      PFOMP                                   8A602450
                *****************************************               8A602460
                *                                                       8A602470
                *                                                       8A602480
                *           PEN DOWN/UP ROUTINE                         8A602490
                *           *******************                         8A602500
                *                                                       8A602510
0088    0000           BSS  E   0                                       8A602520
0088 0  8000    PENUH  DC       /8000       PEN DOWN                    8A602530
0089 0  0400           DC       /0400       PEN UP                      8A602540
                *                                                       8A602550
008A 0  C8FD    PENUD  LDD      PENUH                                   8A602560
008B 0  18D0           RTE      16                                      8A602570
008C 0  D8FB           STD      PENUH                                   8A602580
008D 0  C0EE           LD       PENUU                                   8A602590
008E 0  D8D7    PFOMP  STD      COUNT                                   8A602600
008F 0  70DB           MDX      HOUT                                    8A602610
                *****************************************               8A602620
                *                                                       8A602630
                *                                                       8A602640
                *           PLUS PATTERN                                8A602650
                *           ************                                8A602660
00C0    0000           BSS  E   0                                       8A602670
00C0 0  A409    WORDQ  DC       /A409       PLUS FUNCT                  8A602680
00C1 0  4210           DC       /4210       * INITIALLY                 8A602690
00C2 0  0019    KOUNT  DC       25          COUNT                       8A602700
00C3 0  7800    B1234  DC       /7800                                   8A602710
```

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```
00C4 0  0008        FLOUT DC      8           LOOP COUNT                8A602720
00C5 0  0015              DC      21          LOOP COUNT                8A602730
                    *                                                   8A602740
00C6 0  C8F9        PLUS  LDD     WORDQ       ROTATE PLOTTER            8A602750
00C7 0  18C4              RTE     4           * PLUS WORD AND           8A602760
00C8 0  D8F7              STD     WORDQ       * PLACE                   8A602770
00C9 0  E0F9        GRUNH AND     B1234       * COMMAND WORD            8A602780
00CA 0  18D0              RTE     16          * IN Q REGISTER           8A602790
00CB 0G 74FF00C4          MDX   L FLOUT,-1                              8A602800
00CD 0  71FE              MDX     1 -2                                  8A602810
00CE 0  C0F3              LD      KOUNT                                 8A602820
00CF 0  70EE              MDX     PFOMP                                 8A602830
                    ********************************************      8A602840
                    *                                                   8A602850
                    *                                                   8A602860
                    *           RIGHT 50 ROUTINE                        8A602870
                    *           ****************                        8A602880
00D0    0000              BSS   E 0                                     8A602890
00D0 0  0032        RII50 DC      50          COUNT                     8A602900
00D1 0  1000              DC      /1000       RIGHT COMMAND             8A602910
00D2 0  0008        EIGHT DC      8           PASS COUNT CONSTANT       8A602920
00D3 0  0015              DC      21          LOOP COUNT CONSTANT       8A602930
                    *                                                   8A602940
00D4 0  C8FB        RI50  LDD     RII50                                 8A602950
00D5 0  C0FC        UNCHH LD      EIGHT       RESTORE LOOP              8A602960
00D6 0  D0ED              STO     FLOUT       * COUNTER                 8A602970
00D7 00 74FF00C5          MDX   L FLOUT+1,-1                            8A602980
00D9 0  7003              MDX     THUCH                                 8A602990
00DA 0  C8F7              LDD     EIGHT                                 8A603000
00DB 0  D8E8              STD     FLOUT                                 8A603010
00DC 0  70CC              MDX     DISPA                                 8A603020
00DD 0  71FD        THUCH MDX     1 -3                                  8A603030
00DE 0  C0F1              LD      RII50                                 8A603040
00DF 0  70DE              MDX     PFOMP                                 8A603050
                    ********************************************      8A603060
                    *                                                   8A603070
                    *                                                   8A603080
                    *           X PATTERN                               8A603090
                    *           *********                               8A603100
00E0    0000              BSS   E 0                                     8A603110
00E0 0  2D34        XXX   DC      /2D34       X FUNCTION                8A603120
00E1 0  D2CB              DC      /D2CB       * INITIALLY               8A603130
                    *                                                   8A603140
00E2 0  C8FD        XPATN LDD     XXX                                   8A603150
00E3 0  18C4              RTE     4                                     8A603160
00E4 0  D8FB              STD     XXX                                   8A603170
00E5 0  70E3              MDX     GRUNH                                 8A603180
                    ********************************************      8A603190
                    *                                                   8A603200
                    *                                                   8A603210
                    *           LEFT 50 ROUTINE                         8A603220
                    *           ***************                         8A603230
00E6    0000              BSS   E 0                                     8A603240
00E6 0  0000        LFF50 DC      0           NOT USED                  8A603250
00E7 0  0800              DC      /0800       LEFT COMMAND              8A603260
                    *                                                   8A603270
00E8 0  C8FD        LEF50 LDD     LFF50                                 8A603280
00E9 0  70EB              MDX     UNCHH                                 8A603290
                    ********************************************      8A603300
                    *                                                   8A603310
                    *                                                   8A603320
                    *           LOOP  ROUTINE                           8A603330
                    *           *************                           8A603340
00EA 0  71F8        LOOP  MDX     1 -8                                  8A603350
00EB 0  70BD              MDX     DISPA                                 8A603360
                    ********************************************      8A603370
                    *                                                   8A603380
00EC    0000              BSS   E 0                                     8A603390
```



```
00EC 0  044C        X1100 DC      1100        COUNT                     8A603400
00ED 0  0800              DC      /0800       LEFT COMMAND              8A603410
                    *                                                   8A603420
00EE 0  C8FD        L1100 LDD     X1100                                 8A603430
00EF 0  70CE              MDX     PFOMP                                 8A603440
                    ********************************************      8A603450
                    *                                                   8A603460
00F0 0  00AE        DISP  DC      PENUP       (DUMMY)                   8A603470
00F1 0  00AE              DC      PENUP       PEN UP                    8A603480
00F2 0  00EE              DC      L1100                                 8A603490
00F3 0  00B6              DC      RIG50       RIGHT 50                  8A603500
00F4 0  00B2              DC      UP50        UP 50                     8A603510
00F5 0  00BA              DC      PENUD       PEN DOWN/UP               8A603520
00F6 0  00C6              DC      PLUS        PLUS PATTERN              8A603530
00F7 0  00D4              DC      RI50        RIGHT 50                  8A603540
00F8 0  00BA              DC      PENUD       PEN DOWN/UP               8A603550
00F9 0  00E2              DC      XPATN       X PATTERN                 8A603560
00FA 0  00E8              DC      LEF50       LEFT 50                   8A603570
00FB 0  00EA              DC      LOOP                                  8A603580
                    *                                                   8A603590
000D                QQQQ  EQU     /D          GO TO LOADER AT /D        8A603600
70D7                NNNN  EQU     /70D7       FOR CARD LOADER AT /35    8A603610
0813                WWWW  EQU     /0813       SET IN LOADER AT /04      8A603620
7041                TTTT  EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO  8A603630
                    *                         THE BRANCH FROM THE LOADER 8A603640
                    *                         TO RETUR IN THIS PROGRAM. 8A603650
                    ********************************************      8A603660
00FC    00FB              END   *-1         END CARD NEVER USED        8A603670
```

AUX 1627 REGISTRATION EXERCISER

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	0041	0042
BUILD	0041	0045
B1234	00C3	00C9
CAM	0059	0058
CEOFF	0064	003C,0041,0043,0087
CEON	0066	003E,0046
COMAD	008D	005E
COUNT	0096	00A6,00BE
DISP	00FD	00AA
DISPA	00A9	0082,00DC,00EB
DSW	0068	0049,004C,0054,006A,008D,0092,009F
EIGHT	00D2	00D5,00DA
EXIT	00A1	0093
FLOUT	00C4	007F,00CB,00D6,00D7,00DB
FLUTE	0072	007E
FOX	0092	0095
GRUNH	00C9	00E5
HOUT	009B	0074,00A8,00BF
INIT	0075	005F,0080,0081,009A
KALS	005D	0058
KOUNT	00C2	00CE
LEF50	00E8	00FA
LFF50	00E6	00E8
LOOP	00EA	00FB
L1100	00EE	00F2
NNNN	70D7	0064
NOP	0085	0099
NOTRD	0083	004E
OUTAB	0097	009B
PEEUD	006C	0078
PENUD	00BA	00F5,00F8
PENUH	00B8	0079,00BA,00BC
PENUP	00AE	00F0,00F1
PENUU	00AC	0094,00AE,00BD
PFOMP	00BE	00AF,00B3,00B7,00CF,00DF,00EF
PLUS	00C6	00F6
PPPPP	0094	008F
PP50	00B0	00B2
QQQQ	030D	008C
QSA	0099	005D
RETUR	0046	00FC
RIG50	00B6	00F3
RII50	00D0	00D4,00DE
RIK50	00B4	0086
RI50	00D4	00F7
SAVE2	0068	0047,0060,00A4
SAVE3	008A	0048
SENBI	0062	004A,004B,004D
STEPC	00A5	009D
THUCH	00DD	00D9
TTTT	7041	0066
UNCHH	00D5	00E9
UP50	00B2	00F4
WORDQ	00C0	007B,00C6,00C8
WORDR	006E	007A
WORKQ	006A	00A1
WWWW	0813	0083
XPATN	00E2	00F9
XXX	00E0	007D,00E2,00E4
XXXX	007U	007C
XX1	0050	00A2
XX2	0052	00A3
X1100	00EC	00EE

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1. PURPOSE

THE PURPOSE OF THE AUX 1627 STRESS EXERCISER PROGRAM IS TO TEST THE MECHANICAL PERFORMANCE OF THE PLOTTER.

2. REQUIREMENTS

2.1 DEVICE AREA CODE

IF THE DEVICE TO BE TESTED USES A CUSTOMER ASSIGNED AREA CODE, A NEW AUX PROGRAM DECK OR PAPER TAPE MUST BE CREATED. THE PROCEDURE IS PRESENTED IN THE DOCUMENTATION OF THE AUX PROGRAM GENERATOR UTILITY (PID 08AC - CARD VERSION, PID 08AD - PAPER TAPE VERSION)
THE PROGRAM LOCATIONS THAT MUST BE ALTERED ARE SPECIFIED BY A STATEMENT AT THE BEGINNING OF THE PROGRAM LISTING.

2.2 CARD INPUT

THE AUX DIAGNOSTIC LOADER (PID 08A1) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PROGRAM DECK CAN BE LOADED.

2.3 PAPER TAPE INPUT

THE AUX DIAGNOSTIC LOADER (PAPER TAPE - PID 08A0) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PAPER TAPE PROGRAM CAN BE LOADED.

3. USE PROCEDURE

BEFORE PROCEEDING, A PROGRAM MUST BE IN MAIN-CORE STORAGE RUNNING OR AT A WAIT INSTRUCTION READY TO START RUNNING.

3.1 CARD INPUT LOADING PROCEDURE

A. BE SURE THE 1442 IS AVAILABLE AND ALL CARDS ARE REMOVED.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT TWO TIMES TO ASSURE THE 1442 IS IN CE MODE.
D. PLACE THE SEVEN CARDS OF THE AUX 1816 EXERCISER PROGRAM IN THE HOPPER OF THE 1442 AND FOLLOW WITH A BLANK CARD.

NOTE

EACH PROGRAM CARD HAS A CHARACTER ENTERED INTO COLUMN 80. THIS CHARACTER DEFINES THE CARD'S POSITION IN THE DECK ACCORDING TO THE FOLLOWING SEQUENCE, X(FIRST), THEN 0, 1, 2, 3, 4, AND 5. THE CARDS CANNOT BE READ UNLESS THEY ARE PLACED IN THE HOPPER IN THE CORRECT ORDER.

E. DEPRESS THE 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
F. SET POWER ON/OFF SWITCH OF 1627 PLOTTER TO ON.
G. ENSURE THAT A CLEAR PLOTTING SPACE IS AVAILABLE ABOVE THE HORIZONTAL PEN-CARRIAGE RAILS.
H. PLACE ALL CE PROGRAM SWITCHES IN THEIR OFF POSITION.
I. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO LOAD THE PROGRAM. (IF THE HOPPER OF THE 1442 DOES NOT GO EMPTY THE CHECK-SUM ROUTINE IN THE AUX DIAGNOSTIC LOADER MOST LIKELY REJECTED THE PROGRAM. CHECK THE CARDS FOR PROPER SEQUENCE AND RETURN TO STEP A AND TRY AGAIN).
J. GO TO SECTION 3.3

3.2 PAPER TAPE INPUT LOADING PROCEDURE

A. BE SURE THAT THE 1054 TAPE READER IS AVAILABLE AND THAT THERE IS NO TAPE IN THE READER.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT PUSHBUTTON TWO TIMES TO ASSURE THAT THE 1054 IS PLACED IN CE MODE.
D. PLACE THE FIRST TAPE CHARACTER OF THE PROGRAM DIRECTLY ABOVE THE SENSE PINS IN THE 1054 READER. (THE CHECK-SUM ROUTINE OF THE AUX DIAGNOSTIC LOADER WILL REJECT THE PROGRAM IF THE AUX TAPE IS LOADED INCORRECTLY).
E. SET POWER ON/OFF SWITCH OF 1627 PLOTTER TO ON.
F. ENSURE THAT A CLEAR PLOTTING SPACE IS AVAILABLE ABOVE THE HORIZONTAL PEN-CARRIAGE RAILS.
G. PLACE ALL CE PROGRAM SWITCHES IN THEIR OFF POSITION.
H. DEPRESS CE LEVEL INTERRUPT TO LOAD THE PROGRAM. TAPE ACTION SHOULD START AND CONTINUE UNTIL THE ENTIRE AUX PROGRAM HAS BEEN READ. WHEN THE READER STOPS, THE FIRST TAPE FEED HOLE CHARACTER FOLLOWING THE AUX PROGRAM DATA SHOULD BE LOCATED DIRECTLY ABOVE THE 1054 SENSE PINS FOR A CORRECTLY STORED PROGRAM. IF THE TAPE DID NOT STOP AT SAID LOCATION, RETURN TO STEP A TO RELOAD PROG.

3.3 TYPICAL PROGRAM OPERATING PROCEDURE

THE PROGRAM WILL START AUTOMATICALLY AFTER IT HAS BEEN STORED.

TABLE 1. CE PROGRAM SWITCH SETTINGS

ROUTINE	SWITCHES 8 9 10 11 12 13 14 15	FUNCTION
CE SERVICE STOP	0 0 0 0 1 1 1 1	THIS SWITCH SETTING CAUSES THE 1627 PROGRAM TO STOP BUT DOES NOT TERMINATE THE PROGRAM. TO RESTART THE 1627 DEPRESS THE CE LEVEL INTERRUPT PUSHBUTTON.
PROGRAM TERMINATOR	1 1 1 1 1 1 1 1	THIS SWITCH SETTING INITIATES A ROUTINE THAT TERMINATES THE 1627 PROGRAM. (ALL AUX PROGRAMS USE THE SAME PROGRAM-TERMINATOR SETTING). CAUTION FOLLOW THE TERMINATING PROCEDURE IN SECTION 3.5 .

3.4 CE SERVICE STOP

THE PLOTTER MAY BE STOPPED AT ANY TIME BY PLACING THE CE PROGRAM SWITCHES TO 00001111. SELECTION OF THIS SWITCH OPTION ALLOWS MECHANICAL ADJUSTMENTS TO BE MADE TO THE PLOTTER, BUT IT DOES NOT TERMINATE THE DIAGNOSTIC PROGRAM. THE PROGRAM MAY BE RESUMED BY SETTING THE CE PROGRAM SWITCHES TO THE WINDMILL PATTERN SWITCH OPTION AND DEPRESSING THE CE LEVEL INTERRUPT PUSHBUTTON.

3.5 TERMINATING PROCEDURE

TO TERMINATE THE PROGRAM AND RETURN THE DEVICE TO THE CUSTOMER-

A. SET THE CE PROGRAM SWITCHES TO 00001111 -CE SERVICE STOP. (THE ONLY REASON FOR USING THIS SETTING IS TO STOP ANY DEVICE ACTION WHICH MAY CAUSE AN INTERRUPT).

B. SET THE CE PROGRAM SWITCHES TO 11111111 -TERMINATOR SETTING, AND DEPRESS THE CE INTERRUPT LEVEL PUSHBUTTON ONCE AND ONLY ONCE. (A SECOND DEPRESSION OF THE CE INT. PUSHBUTTON WILL RESULT IN THE AUX DIAGNOSTIC LOADER TRYING TO LOAD A NEW PROGRAM IF THE READER IS READY).

NOTE

TO OFFSET THE POSSIBILITY THAT THE INPUT DEVICE MIGHT BE MALFUNCTIONING THE NEXT TIME THE 1800 SYSTEM NEEDS SERVICING THE FOLLOWING PROGRAM SHOULD BE LOADED INTO AUX CORE AT THE CONCLUSION OF EACH SERVICE CALL -

A. CARD INPUT

LOAD THE AUX 1442 PACKED READ EXERCISE PROGRAM (PID 08AA) AFTER ASSURING THE PROGRAM IS BY PUNCHING CARDS, CE SWITCH SETTING 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING, TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

B. TAPE INPUT

LOAD THE AUX 1054/55 EXERCISE PROGRAM (PID 08A8). AFTER ASSURING THE PROGRAM IS IN BY PUNCHING TAPE, CE SWITCH SETTINGS 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

4. PRINTOUTS

THE ONLY 'PRINTOUT' OF THE AUX 1627 STRESS EXERCISER PROGRAM IS A PATTERN ROUGHLY RESEMBLING A DANISH WINDMILL AND IS FORMED BY PLOTTING FOUR GROUPS OF SEVEN TRIANGLES. NOTICE THAT THE ANGLES NEAR THE DIAMOND CENTER OF THE PATTERN ARE PLOTTED 2/100 OF AN INCH AWAY FROM THE OUTLINE OF THE DIAMOND. THE PLOTTER IS OPERATING CORRECTLY WHEN THE START AND END POINTS OF EACH TRIANGLE COINCIDE.

5. COMMENTS

A PROGRAM MUST BE IN MAIN-CORE STORAGE AND MUST BE RUNNING OR READY TO START BEFORE THE 1627 PLOTTER AUXILIARY-STORAGE STRESS DIAGNOSTIC PROGRAM CAN BE LOADED. ASSUMING THAT THE AUX DIAGNOSTIC LOADER IS PRESENT IN AUXILIARY STORAGE, THE PROGRAM IS IN THE READER AND READY TO BE READ, AND A ROUTINE HAS BEEN SELECTED, DEPRESSING THE CE LEVEL INTERRUPT BUTTON CAUSES THE PROGRAM TO BE STORED AND STARTED. THE PROGRAM BEGINS BY ROLLING THE DRUM TO ESTABLISH A CLEAN PLOTTING AREA, RAISING THE PEN OF THE 1627 PLOTTER, AND MOVING THE PEN TO THE LEFT EDGE OF THE PLOTTER. NEXT, THE START LOCATION IS FIXED BY MOVING THE PEN RIGHT FOR FOUR INCHES. AT THIS POINT, THE PROGRAM IS READY TO PLOT A PATTERN (ROUGHLY RESEMBLING A DANISH WINDMILL) THAT CONSISTS OF 28 TRIANGLES ARRANGED AROUND A DIAMOND CENTER. THE PLOTTING TECHNIQUE IS DISCUSSED IN THE FOLLOWING PARAGRAPHS.

5.1 PLOTTING FIRST TRIANGLE

SIDE 1 OF THE FIRST TRIANGLE IS GENERATED FIRST AND IS PROPAGATED FOR 3.9 INCHES FROM THE STARTING POINT. THIS PLOT IS ACCOMPLISHED USING A COMMAND TABLE AND A VECTOR-LENGTH TABLE. THESE TABLES ARE MODIFIED AFTER SIDE 1 HAS BEEN PLOTTED SO THAT DATA REQUIRED FOR SIDE 2 WILL BE AVAILABLE. SIMILARLY, THE TABLES ARE MODIFIED AFTER SIDE 2 IS PLOTTED, THEREBY PROVIDING DATA FOR SIDE 3. EACH WRITE COMMAND GENERATES A VECTOR 1/100 OF AN INCH LONG. THE DATA STORED IN THE VECTOR-LENGTH TABLE SPECIFY HOW MANY TIMES A COMMAND MUST BE REPEATED BEFORE THE DIRECTION OF THE VECTOR IS CHANGED. THIS PROCESS CONTINUES UNTIL A TRIANGLE HAS BEEN PLOTTED.

5.2 PLOTTING SUBSEQUENT TRIANGLES

AFTER ONE TRIANGLE IS PLOTTED, THE STARTING POINT AND LOCATION OF THE NEXT TRIANGLE IS DETERMINED BY MODIFYING THE COMMAND AND VECTOR-LENGTH TABLES, AND ANOTHER TRIANGLE IS PLOTTED IN THE MANNER DISCUSSED IN PARAGRAPH 5.1. AFTER 28 TRIANGLES HAVE BEEN PLOTTED, THE PROGRAM PLOTS A DIAMOND INSIDE THE STARTING POINTS OF THE 28 TRIANGLES. THE FINISHED PATTERN WILL LOOK LIKE FIGURE 1. UPON COMPLETING THE DIAMOND PATTERN, THE WINDMILL ROUTINE IS AUTOMATICALLY REPEATED. THE WINDMILL ROUTINE IS PERPETUATED UNTIL A CE SERVICE STOP ROUTINE OR A TERMINATE-RUN ROUTINE IS SELECTED.

6. APPENDIX

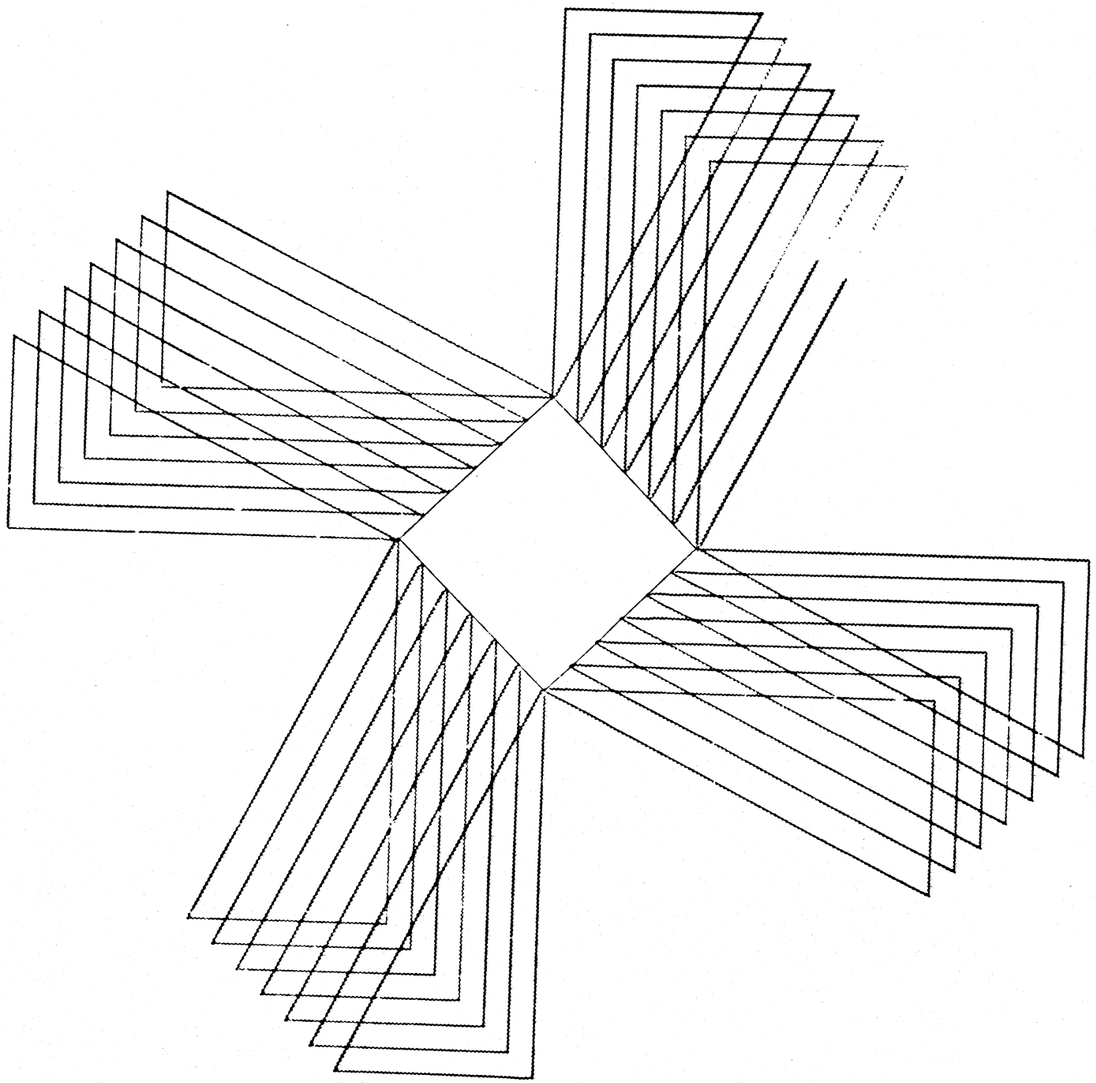
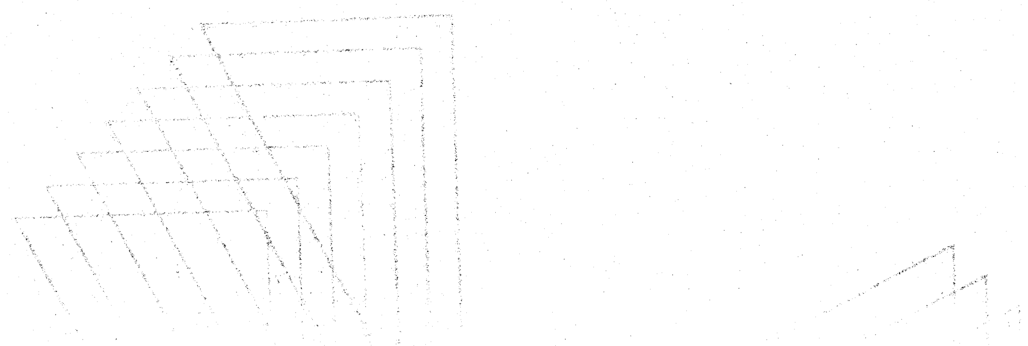


FIGURE 1
SAMPLE PLOT

F
L



0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

AUX 1627 STRESS EXERCISER

```
                    ABS                                                 8A700000
028C                ORG     /36                                         8A700010
                ************************************************        8A700020
2800            AREA  EQU     /2800       1ST 1627 AREA CODE            8A700030
                *       IF THIS PROG IS TO BE USED FOR A MACH           8A700040
                * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH         8A700050
                * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST      8A700060
                * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A        8A700070
                * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG         8A700080
                * GENERATOR WRITE-UP FOR PROCEDURE. (SPECIAL)           8A700090
                ************************************************        8A700100
                *                                                       8A700110
                *                                                       8A700120
                *           PLOTTER STRESS TEST                         8A700130
                *           *******************                         8A700140
                *           ( THE DANISH WINDMILL PATTERN )             8A700150
                *                                                       8A700160
                * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE      8A700170
                *                                                       8A700180
                *           GENERAL INSTRUCTIONS                        8A700190
                *                                                       8A700200
                *           READY THE PLOTTER                           8A700210
                *              TURN PLOTTER ON                          8A700220
                *              MAKE SURE THAT CLEAR PLOTTING            8A700230
                *              * SPACE IS LOCATED ABOVE CARRIER         8A700240
                *                                                       8A700250
                *           CE SWITCH SETTINGS                          8A700260
                *                                                       8A700270
                *              00001111  CE SERVICE STOP                8A700280
                *              11111111  TERMINATE RUN                  8A700290
                *              ALL OTHER COMBINATIONS VOID              8A700300
                *                                                       8A700310
                *                                                       8A700320
                * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION      8A700330
                * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.            8A700340
                ************************************************        8A700350
                *                                                       8A700360
                *           AUX PROG ENTRY POINTS                       8A700370
                *           *********************                       8A700380
                *                                                       8A700390
                *           1ST PASS ENTRY                              8A700400
                *                                                       8A700410
                * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN     8A700420
                * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER          8A700430
                *                                                       8A700440
0036 0  1000        NOP             NO OPERATION                        8A700450
0037 0  1000        NOP             NO OPERATION                        8A700460
0038 0  1000        NOP             NO OPERATION                        8A700470
0039 0  1000        NOP             NO OPERATION                        8A700480
003A 0  1000        NOP             NO OPERATION                        8A700490
003B 0  1000        NOP             NO OPERATION                        8A700500
003C 0  C028        LD      NN      RESTORE LOC NICE                    8A700510
003D 0  D0F7        STO     /35     * IN AUX LOADER                     8A700520
                *                                                       8A700530
003E 0  C02F        LD      CEOFF   PLACE BRANCH                        8A700540
003F 0  D0C4        STO     /04     * TO RETUR LABEL                    8A700550
                *                                                       8A700560
                *           ALL BUT 1ST PASS ENTRY POINT                8A700570
                *                                                       8A700580
0040 0  082B    RETUR XIO       CEON                                    8A70059C
0041 0  6A1F        STX   2 SAVE2+1                                     8A700600
0042 0  6820        STX   3 SAVE3+1                                     8A700610
0043 0  0826        XIO     DSW     SENSE DEVICE STATUS                 8A700620
0044 0  0823        XIO     SENBI   SENSE CE SW TO ACCUM                8A700630
0045 0  E022        AND     SENBI   BLOCK OUT PROG SEL SW               8A700640
0046 0  F021        EOR     SENBI                                       8A700650
0047 00 4C18005C    BSC  L  NOTRD,+-  BR OUT OF PROGRAM                 8A700660
                *                                                       8A700670
```


AUX 1627 STRESS EXERCISER

```
0049 0  F022        EOR     CEON                                        8A700680
004A 00 4C180060    BSC  L  SAVE2,+-    BR CE SERVICE STOP              8A700690
                *                                                       8A700700
                *           OUTPUT ROUTINE                              8A700710
                *           **************                              8A700720
004C 00 65000012    XX1   LDX  L1 18                                    8A700730
004E 00 66000000    XX2   LDX  L2 0                                     8A700740
0050 00 6700FFEC    XX3   LDX  L3 -20                                   8A700750
                *                                                       8A700760
0052 0  C273        HOUT  LD    2 OUTAB                                 8A700770
0053 00 4C18009C        BSC  L  STEPC,+-    BR NO CHAR AT THIS          8A700780
0055 0  D014            STO     DSW         * TABLE LOCATION            8A700790
0056 0  7201            MDX   2 1                                       8A700800
                *                                                       8A700810
0057 0  0818        EXIT  XIO       WORKQ                               8A700820
0058 0  69F4        EXITX STX   1 XX1+1                                 8A700830
0059 0  6AF5            STX   2 XX2+1                                   8A700840
005A 0  6BF6            STX   3 XX3+1                                   8A700850
005B 0  7004            MDX     SAVE2                                   8A700860
                ************************************************        8A700870
                *                                                       8A700880
                *           EXIT POINTS TO AUX LOADER                   8A700890
                *           *************************                   8A700900
                *                                                       8A700910
                *           TERMINATE EXIT POINT                        8A700920
                *                                                       8A700930
005C 00 65000813    NOTRD LDX  L1 WWWW                                  8A700940
005E 0  69A5            STX   1 /04                                     8A700950
005F 0  080E            XIO     CEOFF                                   8A700960
                *                                                       8A700970
                *           NORMAL EXIT POINT                           8A700980
                *                                                       8A700990
0060 00 66000000    SAVE2 LDX  L2 0                                     8A701000
0062 00 67000000    SAVE3 LDX  L3 0                                     8A701010
0064 0  70A8            MDX     QQQQ        EXIT TO AUX LOADER          8A701020
                ************************************************        8A701030
                *                                                       8A701040
                *           CONSTANTS AND/OR IOCC WORDS                 8A701050
                *                                                       8A701060
0065 0  70D7        NN    DC        NNNN                                8A701070
0066    0000            BSS  E  0                                       8A701080
0066 0  0019        KEXTR DC        25                                  8A701090
0067 0  5000              DC        /5000                               8A701100
0068 0  00FF        SENBI DC        /00FF       TERMINATOR CONSTANT     8A701110
0069 0  0760              DC        /0760       SENSE CE SWITCHES       8A701120
006A 0  0000        DSW   DC        /0000       OUTPUT COMMAND          8A701130
0068 0  2F01              DC        /0701+AREA  PLOTTER DSW             8A701140
006C 0  00F0        CEON  DC        /00F0                               8A701150
006D 0  2801              DC        /0001+AREA CE ON WORD               8A701160
006E 0  703B        CEOFF DC        TTTT                                8A701170
006F 0  2800              DC        /0000+AREA CE OFF WORD              8A701180
0070 0  006A        WORKQ DC        DSW                                 8A701190
0071 0  2900              DC        /0100+AREA IOCC WORD WR PLOT        8A701200
                ************************************************        8A701210
                *                                                       8A701220
                *           OUTPUT TABLE                                8A701230
0072    0000            BSS  E  0                                       8A701240
0072 0  0001        COUNT DC        1           OUTPUT GROUP COUNTER    8A701250
0073 0  0400        OUTAB DC        /0400       OUTPUT CHARACTER        8A701260
0074 0  0000              DC        /0000       OUTPUT CHARACTER        8A701270
0075 0  0000              DC        /0000       OUTPUT CHARACTER        8A701280
0076 0  0000              DC        /0000       OUTPUT CHARACTER        8A701290
0077 0  0000              DC        /0000       OUTPUT CHARACTER        8A701300
0078 0  0000              DC        /0000       OUTPUT CHARACTER        8A701310
0079 0  0000              DC        /0000       TERM TEST FOR ZERO      8A701320
                ************************************************        8A701330
                *                                                       8A701340
                *           TRIANGLE ROUTINE                            8A701350
```

```
                        *              ****************                                    8A701360
                        *                                                                  8A701370
007A 0  6231            TRIAD LDX    2 49                                                 8A701380
007B 00 C70000EB              LD    L3 TRITA+20                                           8A701390
007D 0  6AF4            TRI   STX    2 COUNT                                              8A701400
007E 0  62FA                  LDX    2 -6                                                 8A701410
007F 0  D279            TRIAC STO    2 OUTAB+6                                            8A701420
0080 0  7201                  MDX    2 1                                                  8A701430
0081 0  D279                  STO    2 OUTAB+6                                            8A701440
0082 0  1005                  SLA      5                                                  8A701450
0083 0  7201                  MDX    2 1             SKIP ON 3RD PASS                     8A701460
0084 0  70FA                  MDX      TRIAC                                              8A701470
0085 0  7301                  MDX    3 1                                                  8A701480
0086 0  70CB                  MDX      HOUT                                               8A701490
0087 0  70CA                  MDX      HOUT                                               8A701500
                        ********************************************************         8A701510
                        *                                                                8A701520
                        *              EXTRA OR END ROUTINE                              8A701530
                        *              ********************                              8A701540
                        *                                                                8A701550
0088 0  6101            RETU  LDX    1 1                                                  8A701560
0089 0  7016                  MDX      DISPA                                              8A701570
                        *                                                                8A701580
008A 0  7300            EXTRA MDX    3 0             FULL PATTERN SKIP                    8A701590
008B 0  7CFC                  MDX      RETU                                               8A701600
008C 0  63EC                  LDX    3 -20                                                8A701610
008D 0  C01C                  LD       MOVE1                                            8A701620
008E 0  4818                  BSC      +-            SKIP IF END OF RUN                 8A701630
008F 0  7010                  MDX      DISPA                                            8A701640
                        *                                                                8A701650
0090 0  6101                  LDX    1 1                                                  8A701660
0091 0  C8D4                  LDD      KEXTR                                              8A701670
0092 00 741900AB              MDX  L   MOVE2,25                                         8A701680
0094 00 74E700AA              MDX  L   MOVE1,-25     SKIPS WHEN TEST COMPL               8A701690
0096 0  700F                  MDX      SLOT                                             8A701700
0097 0  700E                  MDX      SLOT                                             8A701710
                        ********************************************************         8A701720
                        *                                                                8A701730
                        *              PEN UP ROUTINE                                    8A701740
                        *              **************                                    8A701750
                        *                                                                8A701760
0098    0000                  BSS  E   0                                                 8A701770
0098 0  0001            PENUU DC       /0001         COUNT OF ONE                        8A701780
0099 0  0400                  DC       /0400         PEN UP WORD                         8A701790
                        *                                                                8A701800
009A 0  C8FD            PENUP LDD      PENUU                                            8A701810
009B 0  700A                  MDX      SLOT                                             8A701820
                        ********************************************************         8A701830
                        *                                                                8A701840
009C 0  6200            STEPC LDX    2 0                                                8A701850
009D 00 74FF0072              MDX  L   COUNT,-1                                         8A701860
009F 0  70B2                  MDX      HOUT                                             8A701870
                        *                                                                8A701880
                        *              DISPATCHER ROUTINE                                8A701890
                        *              ******************                                8A701900
                        *                                                                8A701910
00A0 0  7101            DISPA MDX    1 1                                                8A701920
00A1 0  1010                  SLA      16                                               8A701930
00A2 0  D0D1                  STO      OUTAB+1                                          8A701940
00A3 00 4D8000EA              BSC  I1 DISP           BRANCH TO NEXT ROUTIN              8A701950
                        ********************************************************         8A701960
                        *                                                                8A701970
                        *              PEN DOWN ROUTINE                                  8A701980
                        *              ****************                                  8A701990
                        *                                                                8A702000
00A5 0  C802            PENDW LDD      PENDD                                            8A702010
00A6 0  D8CB            SLOT  STD      COUNT                                            8A702020
00A7 0  70AA                  MDX      HOUT                                             8A702030
```



```
                        ********************************************************         8A702040
                        *                                                                8A702050
                        *              1ST MOVEMENT ROUTIN                               8A702060
                        *              *******************                               8A702070
                        *                                                                8A702080
00A8    0000                  BSS  E   0                                                 8A702090
00A8 0  0001            PENDD DC       /0001         COUNT OF ONE                        8A702100
00A9 0  8000                  DC       /8000         PEN DW WORD                         8A702110
00AA 0  0096            MOVE1 DC       150           COUNT                               8A702120
00AB 0  0000            MOVE2 DC       0             COUNT                               8A702130
00AC 0  3050            DIRIA DC       /3050                                             8A702140
00AD 0  4828                  DC       /4828                                             8A702150
00AE 0  0094            CT148 DC       148           COUNT FOR END MOVEM                 8A702160
                        *                                                                8A702170
00AF 0  C0FE            MOV1A LD       CT148                                             8A702180
00B0 0  D0F9                  STO      MOVE1                                             8A702190
00B1 0  C8FA                  LDD      DIRIA                                             8A702200
00B2 0  18C8                  RTE      8                                                 8A702210
00B3 0  D8F8                  STD      DIRIA                                             8A702220
00B4 0  C8F7            MOV1  LDD      DIRIA                                             8A702230
00B5 0  D0BD                  STO      OUTAB                                             8A702240
00B6 0  18C8                  RTE      8                                                 8A702250
00B7 0  D8F4                  STD      DIRIA                                             8A702260
00B8 0  C0F1                  LD       MOVE1                                             8A702270
00B9 00 4C1800A0        LATE  BSC  L   DISPA,+-      NO COUNT BRANCH                   8A702280
00BB 0  D0B6                  STO      COUNT                                             8A702290
00BC 0  7095                  MDX      HOUT                                              8A702300
                        ********************************************************         8A702310
                        *                                                                8A702320
                        *              2ND MOVEMENT ROUTINE                              8A702330
                        *              ********************                              8A702340
                        *                                                                8A702350
00BD 0  C0EE            MOV2  LD       DIRIA                                             8A702360
00BE 0  D0B4                  STO      OUTAB                                             8A702370
00BF 0  C0EB                  LD       MOVE2                                             8A702380
00C0 0  70F8                  MDX      LATE                                              8A702390
                        ********************************************************         8A702400
                        *                                                                8A702410
                        *              DOWN ROUTINE                                      8A702420
                        *              ************                                      8A702430
                        *                                                                8A702440
00C1 0  C802            DWN2  LDD      DWNN2                                             8A702450
00C2 0  70E3                  MDX      SLOT                                              8A702460
                        ********************************************************         8A702470
                        *                                                                8A702480
                        *              CLEAR PAPER ROUTINE                               8A702490
                        *              *******************                               8A702500
                        *                                                                8A702510
00C3 0  4A40            LOOPA DC       /4A40         LEFT LEFT UP COMMAND                8A702520
00C4    0000                  BSS  E   0                                                 8A702530
00C4 0  0002            DWNN2 DC       2                                                 8A702540
00C5 0  2000                  DC       /2000                                             8A702550
00C6 0  0190            OVERA DC       400           COUNT                               8A702560
00C7 0  1000                  DC       /1000                                             8A702570
00C8 0  0096            MOOSA DC       150           MOVE 1 COUNT CONSTANT               8A702580
00C9 0  0000                  DC       0             MOVE 2 COUNT CONSTANT               8A702590
                        *                                                                8A702600
00CA 00 66000113        LOOP  LDX  L2  275                                               8A702610
00CC 0  C8DF                  LDD      DIRIA                                             8A702620
00CD 0  18D8                  RTE      24                                                8A702630
00CE 0  D8DD                  STD      DIRIA                                             8A702640
00CF 0  C8F8                  LDD      MOOSA                                             8A702650
00D0 0  D8D9                  STD      MOVE1                                             8A702660
00D1 0  6100                  LDX    1 0                                                 8A702670
00D2 0  63EB                  LDX    3 -21                                               8A702680
00D3 0  C0EF                  LD       LOOPA                                             8A702690
00D4 0  70A8                  MDX      TRI                                               8A702700
                        ********************************************************         8A702710
```

```
                        *           RIGHT 400                                  8A702720
                        *           *********                                  8A702730
                        *                                                      8A702740
00D5 0  C8F0            OVER  LDD   OVERA                                      8A702750
00D6 0  70CF                  MDX   SLOT                                       8A702760
                        ********************************************           8A702770
                        *                                                      8A702780
                        *           TRIANGLE CONSTANTS                         8A702790
                        *                                                      8A702800
00D7 0  2A40            TRITA DC    /2A40       TRI1                           8A702810
00D8 0  2A40                  DC    /2A40                                      8A702620
00D9 0  5240                  DC    /5240                                      8A702830
00DA 0  418C                  DC    /418C                                      8A702840
00DB 0  418C                  DC    /418C                                      8A702850
00DC 0  4A80                  DC    /4A80       TRI2                           8A702860
00DD 0  4A80                  DC    /4A80                                      8A702870
00DE 0  3280                  DC    /3280                                      8A702880
00DF 0  114A                  DC    /114A                                      8A702890
00E0 0  114A                  DC    /114A                                      8A702900
00E1 0  5180                  DC    /5180       TRI3                           8A702910
00E2 0  5180                  DC    /5180                                      8A702920
00E3 0  2980                  DC    /2980                                      8A702930
00E4 0  2252                  DC    /2252                                      8A702940
00E5 0  2252                  DC    /2252                                      8A702950
00E6 0  3140                  DC    /3140       TRI4                           8A702960
00E7 0  3140                  DC    /3140                                      8A702970
00E8 0  4940                  DC    /4940                                      8A702980
00E9 0  0A94                  DC    /0A94                                      8A702990
00EA 0  0A94            DISP  DC    /0A94                                      8A703000
                        *                                                      8A703010
                        *           DISPATCHER XFER VECTORS                    8A703020
00EB 0  00D5                  DC    OVER                                       8A703030
00EC 0  00A5                  DC    PENDW                                      8A703040
00ED 0  007A                  DC    TRIAD                                      8A703050
00EE 0  007A                  DC    TRIAD                                      8A703060
00EF 0  007A                  DC    TRIAD                                      8A703070
00F0 0  007A                  DC    TRIAD                                      8A703080
00F1 0  007A                  DC    TRIAD                                      8A703090
00F2 0  009A                  DC    PENUP                                      8A703100
00F3 0  0084                  DC    MOV1                                       8A703110
00F4 0  008D                  DC    MOV2                                       8A703120
00F5 0  008A                  DC    EXTRA                                      8A703130
00F6 0  00C1                  DC    DWN2                                       8A703140
00F7 0  00A5                  DC    PENDW                                      8A703150
00F8 0  00AF                  DC    MOV1A                                      8A703160
00F9 0  0084                  DC    MOV1                                       8A703170
00FA 0  0034                  DC    MOV1                                       8A703180
00FB 0  0084                  DC    MOV1                                       8A703190
00FC 0  009A                  DC    PENUP                                      8A703200
00FD 0  00CA                  DC    LOOP                                       8A703210
                        *                                                      8A703220
000D                    QQQQ  EQU   /D          GO TO LOADER AT /D           8A703230
70D7                    NNNN  EQU   /70D7       FOR CARD LOADER AT /35       8A703240
0813                    WWWW  EQU   /0813       SET IN LOADER AT /04         8A703250
703B                    TTTT  EQU   /7000+RETUR-/4-1    THIS IS EQUAL TO     8A703260
                        *                       THE BRANCH FROM THE LOADER   8A703270
                        *                       TO RETUP IN THIS PROGRAM.    8A703280
                        ********************************************           8A703290
00FE    00FD                  END   *-1         END CARD NEVER USED           8A703300
```


CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	2800	006B,006D,006F,0071
CEOFF	006E	003E,005F
CEON	C06C	0040,0049
COUNT	0072	007D,009D,00A6,00BB
CT148	00AE	00AF
DIRIA	00AC	0081,00B3,00B4,00B7,00BD,00CC,00CE
DISP	00EA	00A3
DISPA	00A0	0089,(08F,00B9
DSW	006A	0043,0055,0070
DWNN2	00C4	00C1
DWN2	00C1	00F6
EXIT	0057	
EXITX	0058	
EXTRA	008A	00F5
HOUT	0052	0086,0087,009F,00A7,00EC
KEXTR	0066	0091
LATE	00B9	00C0
LOOP	00CA	00FD
LOOPA	00C3	00D3
MODSA	00C8	00CF
MOVE1	00AA	008D,0094,00B0,00B8,00D0
MOVE2	00AB	0092,008F
MOV1	0084	00F3,00F9,00FA,00FB
MOV1A	00AF	00F8
MOV2	008D	00F4
NN	0065	003C
NNNN	70D7	0065
NOTRD	005C	0047
OUTAB	0073	0052,007F,0081,00A2,00B5,00BE
OVER	00D5	00EB
OVERA	00C6	00D5
PENDD	00A8	00A5
PENDW	00A5	00EC,00F7
PENUP	009A	00F2,00FC
PENUU	0098	009A
QQQQ	000D	0064
RETU	0088	0088
RETUR	0040	00FE
SAVE2	0060	0041,004A,005B
SAVE3	0062	0042
SENBI	0068	0044,0045,0046
SLOT	00A6	0096,0097,0098,00C2,00D6
STEPC	009C	0053
TRI	007D	00D4
TRIAC	007F	0084
TRIAD	007A	00ED,00EE,00EF,00F0,00F1
TRITA	00D7	007B
TTTT	703B	006E
WORKQ	0070	0057
WWWW	0813	005C
XX1	004C	0058
XX2	004E	0059
XX3	0050	005A

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1. PURPOSE

THE AUX 1054/55 EXERCISER PROGRAM TESTS THE READING FUNCTION OF THE 1054 PAPER TAPE READER ANR THE PUNCHING FUNCTION OF THE 1055 PAPER TAPE PUNCH. THE PROGRAM CAN ALSO BE USED TO DUPLICATE AN EXISTING PUNCHED PAPER TAPE.

2. PREREQUISITES

2.1 DEVICE AREA CODE

IF THE DEVICE TO BE TESTED USES A CUSTOMER ASSIGNED AREA CODE, A NEW AUX PROGRAM DECK OR PAPER TAPE MUST BE CREATED. THE PROCEDURE IS PRESENTED IN THE DOCUMENTATION OF THE AUX PROGRAM GENERATOR UTILITY (PID 08AC - CARD VERSION, PID 08AD - PAPER TAPE VERSION) THE PROGRAM LOCATIONS THAT MUST BE ALTERED ARE SPECIFIED BY A STATEMENT AT THE BEGINNING OF THE PROGRAM LISTING.

2.2 CARD INPUT

--CAUTION--

DO NOT ATTEMPT TO LOAD THIS PROGRAM IF THE CARD READER SHARES A CHANNEL WITH ANOTHER DEVICE WHILE THAT DEVICE IS OPERATING.

THE AUX DIAGNOSTIC LOADER (PID 08A1) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PROGRAM DECK CAN BE LOADED.

2.3 PAPER TAPE INPUT

THE AUX DIAGNOSTIC LOADER (PAPER TAPE - PID 08A0) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PAPER TAPE PROGRAM CAN BE LOADED.

3. USE PROCEDURE

BEFORE PROCEEDING, A PROGRAM MUST BE IN MAIN-CORE STORAGE RUNNING OR AT A WAIT INSTRUCTION READY TO START RUNNING.

3.1 CARD INPUT LOADING PROCEDURE

A. BE SURE THE 1442 IS AVAILABLE AND ALL CARDS ARE REMOVED.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT TWO TIMES TO ASSURE THE 1442 IS IN CE MODE.

D. PLACE THE SEVEN CARDS OF THE AUX 1816 EXERCISER PROGRAM IN THE HOPPER OF THE 1442 AND FOLLOW WITH A BLANK CARD.

NOTE

EACH PROGRAM CARD HAS A CHARACTER ENTERED INTO COLUMN 80. THIS CHARACTER DEFINES THE CARD'S POSITION IN THE DECK ACCORDING TO THE FOLLOWING SEQUENCE, X(FIRST), THEN 0, 1, 2, 3, 4, AND 5. THE CARDS CANNOT BE READ UNLESS THEY ARE PLACED IN THE HOPPER IN THE CORRECT ORDER.

E. DEPRESS THE 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
F. SELECT THE DESIRED ROUTINE FROM TABLE 1.
G. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO LOAD THE PROGRAM. (IF THE HOPPER OF THE 1442 DOES NOT GO EMPTY THE CHECK-SUM ROUTINE IN THE AUX DIAGNOSTIC LOADER MOST LIKELY REJECTED THE PROGRAM. CHECK THE CARDS FOR PROPER SEQUENCE AND RETURN TO STEP A AND TRY AGAIN).
H. GO TO SECTION 3.3

3.2 PAPER TAPE INPUT LOADING PROCEDURE

A. BE SURE THAT THE 1054 TAPE READER IS AVAILABLE AND THAT THERE IS NO TAPE IN THE READER.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT PUSHBUTTON TWO TIMES TO ASSURE THAT THE 1054 IS PLACED IN CE MODE.
D. PLACE THE FIRST TAPE CHARACTER OF THE PROGRAM DIRECTLY ABOVE THE SENSE PINS IN THE 1054 READER. (THE CHECK-SUM ROUTINE OF THE AUX DIAGNOSTIC LOADER WILL REJECT THE PROGRAM IF THE AUX TAPE IS LOADED INCORRECTLY).
E. SELECT THE DESIRED ROUTINE FROM TABLE 1.
F. DEPRESS CE LEVEL INTERRUPT TO LOAD THE PROGRAM. TAPE ACTION SHOULD START AND CONTINUE UNTIL THE ENTIRE AUX PROGRAM HAS BEEN READ. WHEN THE READER STOPS, THE FIRST TAPE FEED HOLE CHARACTER FOLLOWING THE AUX PROGRAM DATA SHOULD BE LOCATED DIRECTLY ABOVE THE 1054 SENSE PINS FOR A CORRECTLY STORED PROGRAM. IF THE TAPE DID NOT STOP AT SAID LOCATION, RETURN TO STEP A TO RELOAD PROG.

3.3 OPERATING PROCEDURE

THE ROUTINE SELECTED WILL AUTOMATICALLY START AFTER THE PROGRAM HAS BEEN ENTERED INTO AUX STORAGE. SUBSEQUENT ROUTINES MAY BE SELECTED AT ANY TIME USING THE SWITCH SETTINGS LISTED IN TABLE 1.

THE FOLLOWING STEPS OUTLINES A TYPICAL OPERATING PROCEDURE. FOR ADDITIONAL INFORMATION REGARDING THE OPERATIONS SELECTED BY THE VARIOUS CE PROGRAM SWITCH SETTINGS REFER TO TABLE 1.

A. USING THE PROGRAM SWITCHES OF THE CE PANEL, SELECT THE PUNCH-PATTERN ROUTINE. (00000001)
B. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL).
C. THE PUNCH WILL STOP AFTER ONE COMPLETE PATTERN HAS BEEN PUNCHED. IF MORE PUNCH OUTPUT IS NEEDED DEPRESS CE INTERRUPT.

NOTE

THE FIRST CHARACTER WILL BE PUNCHED ONLY IN CHANNEL 1.

D. WHEN THE MACHINE STOPS PUNCHING TAPE, SET THE CE PROGRAM SWITCHES TO 00000011 (PUNCH READ/COMPARE ROUTINE).
E. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON TO START PUNCH READ/COMPARE TEST.

NOTE

THE PUNCH READ/COMPARE TEST WILL CONTINUE UNTIL AN ERROR OCCURS. IF NO ERROR OCCURS, THE READING FUNCTION OF THE 1054

AND THE PUNCHING FUNCTION OF THE 1055 MAY BE ASSUMED TO BE OPERATING CORRECTLY. TAPE PUNCHING AND READING WILL CEASE IF AN ERROR OCCURS. CHECK THE TAPE IN CASE OF ERRORS. IF THE TWO CHARACTERS JUST PAST THE READ AND PUNCH STATION ARE DIFFERENT, THE 1055 PAPER TAPE PUNCH IS PROBABLY FAULTY. HOWEVER, IF THE TAPE IS PUNCHED CORRECTLY, THE 1054 PAPER TAPE READER MAY BE FUNCTIONING IMPROPERLY. TO CHECK THE 1054, PROCEED TO STEP F. IF DESIRED CONTINUE THE PUNCH READ/COMPARE TEST BY FIRST PLACING THE TAPE IN THE 1054 IN SUCH A MANNER THAT THE PUNCHED CHARACTER PLACED JUST PAST THE READ SENSORS IS IDENTICAL WITH THE LAST CHARACTER PUNCHED. THEN, DEPRESS THE CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO RESTART THE ROUTINE. IF THE 1054 AND 1055 UNITS FAIL TO RESPOND WHEN THE CE LEVEL INTERRUPT PUSHBUTTON IS DEPRESED, AN INTERRUPT HAS PROBABLY BEEN LOST. TO RESTART, SET THE CE PROGRAM SWITCHES TO 00001111 AND DEPRESS THE CE LEVEL INTERRUPT PUSHBUTTON. AFTER ALL MAINLINE INTERRUPTS HAVE OCCURRED AND THE CE INTERRUPT HAS BEEN SERVICED, RETURN THE CE PROGRAM SWITCHES TO THEIR PREVIOUS SETTINGS AND PROCEED.

F. SET THE CE PROGRAM SWITCHES TO 00000100 TO DUPLICATE THE TAPE.

NOTE

IF THE PAPER-TAPE MACHINES SHOULD STOP DURING THE DUPLICATE-TAPE ROUTINE, DEPRESS THE CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO RESTART. IF THE 1054 AND 1055 UNITS FAIL TO RESPOND WHEN THE CE LEVEL INTERRUPT PUSHBUTTON IS DEPRESSED, AN INTERRUPT HAS PROBABLY BEEN LOST. TO RESTART, SET THE CE PROGRAM SWITCHES TO 00001111 AND DEPRESS THE CE LEVEL INTERRUPT PUSHBUTTON. AFTER ALL MAINLINE INTERRUPTS HAVE OCCURRED AND THE CE INTERRUPT HAS BEEN SERVICED, RETURN THE CE PROGRAM SWITCHES TO THEIR PREVIOUS SETTINGS AND PROCEED.

G. COMPARE THE PUNCHED TAPE WITH THE SAMPLE TAPE SHOWN IN FIGURE 1. CHECK FOR MISSING PUNCHES.

NOTE

TO RESTART PUNCH READ/COMPARE ROUTINE, SET CE BIT SWITCHES TO 000000011 DEPRESS CE LEVEL INTERRUPT PUSHBUTTON, AND RETURN TO STEP C OF THIS OPERATING PROCEDURE.

H. UPON COMPLETION OF THE SERVICE CALL PROCEED TO SECTION 3.5 TO RELEASE THE 1054/55 TO THE CUSTOMER.

TABLE 1. CE PROGRAM SWITCH SETTINGS

ROUTINE	SWITCHES 8 9 10 11 12 13 14 15	FUNCTION
FAREWELL SETTING	0 0 0 0 0 0 0 0	THIS FAREWELL SETTING WILL REMOVE THE DEVICE FROM CE MODE AND LEAVE THE 1054/55 READY TO USE. SELECT SWITCH SETTING AND DEPRESS CE INTERRUPT.
PUNCH ONE COMPLETE TEST PATTERN AND STOP	0 0 0 0 0 0 0 1	THIS SWITCH SETTING CAUSES ONE COMPLETE TEST PATTERN TO BE PUNCHED. THE TEST PATTERN IS USED FOR COMPARISON DURING THE PUNCH/READ/COMPARE ROUTINE. TO PUNCH ADDITIONAL TEST PATTERNS DEPRESS THE CE LEVEL INTERRUPT PUSHBUTTON.
CONTINUOUS READ/NO COMPARISON	0 0 0 0 0 0 1 0	THIS SWITCH SETTING ALLOWS THE EQUIPMENT TO BE ADJUSTED AND MONITORED WHILE THE ROUTINE IS BEING EXECUTED. ERRORS DO NOT CAUSE THE EQUIPMENT TO STOP.

PUNCH READ/ COMPARE	0 0 0 0 0 0 1 1	THIS SWITCH SETTING INITIATES A ROUTINE THAT AUTOMATICALLY COMPARES THE DATA PUNCHED IN THE PUNCH-ONE-COMPLETE-TEST-PATTERN-AND STOP ROUTINE WITH THE DATA READ DURING THE ROUTINE. THE PUNCHING ROUTINE MUST BE EXECUTED IMMEDIATELY BEFORE READ/ COMPARE ROUTINE. IF AN ERROR OCCURS DURING THE READ/COMPARE ROUTINE, THE 1054 AND 1055 UNITS WILL STOP AND THE PUNCHED TAPE AT THE READ STATION CAN BE VISUALLY COMPARED WITH THE PUNCHED TAPE AT THE PUNCH STATION. THIS COMPARISON SHOULD INDICATE WHETHER THE ERROR WAS CAUSED BY THE 1054 OR 1055 UNIT.
DUPLICATE TAPE	0 0 0 0 0 1 0 0	THIS SWITCH SETTING CAUSES THE EQUIPMENT TO DUPLICATE A PAPER TAPE. THE EQUIPMENT CAN BE ADJUSTED AND MONITORED WHILE THE ROUTINE IS BEING EXECUTED. ERRORS DO NOT CAUSE THE EQUIPMENT TO STOP.
CE SERVICE STOP	0 0 0 0 1 1 1 1	THIS SWITCH SETTING CAUSES THE PROGRAM TO STOP BUT DOES NOT TERMINATE THE PROGRAM. IT IS RECOMMENDED TO USE THIS SETTING WHEN ADJUSTING THIS DEVICE. TO START THE ROUTINE, SELECT THE CE PROGRAM SWITCH SETTINGS AND DEPRESS CE INTERRUPT BUTTON.
SELECTED PUNCH	X X X X X 0 0 0	INDIVIDUAL PUNCHES OR VARIOUS COMBINATIONS OF PUNCHES CAN BE SET BY TURNING ON APPROPRIATE BIT SWITCHES. THE CORRELATION BETWEEN THE SWITCHES AND CHANNEL NUMBERING OF THE TAPE IS AS FOLLOWS- CE SWITCHES 8 9 10 11 12 13 14 15 CHANNEL NO. 8 7 6 5 4.3 2 1 THE SPROKET HOLE IN THE TAPE IS LOCATED BETWEEN CHANNELS 3 AND 4. X- ONE OF THE FIRST FIVE SWITCHES MUST BE ON TO ACTIVATE THIS ROUTINE.
•• CAUTION ••		DO NOT TURN ON ALL EIGHT SWITCHES AT ONCE, FOR THIS WILL TERMINATE THE PROGRAM.
PROGRAM TERMINATOR	1 1 1 1 1 1 1 1	THIS SWITCH SETTING CAUSES THE DIAGNOSTIC PROGRAM TO BE TERMINATED. THE DIAGNOSTIC PROGRAM IS SET UP TO LOAD THE NEXT AUX PROGRAM. (ALL AUX PROGRAMS USE THE SAME PROGRAM-TERMINATOR SETTING.) THIS SWITCH SETTING MUST ALWAYS BE USED UPON COMPLETION OF THE SERVICE CALL TO RELEASE THE DEVICE TO THE CUSTOMER.
♥		
•• CAUTION ••		FOLLOW THE TERMINATING PROCEDURE IN SECTION 3.5

3.4 CE SERVICE STOP

THIS SWITCH SETTING WILL NOT TERMINATE THE PROGRAM BUT IT WILL CAUSE THE DEVICE TO STOP AND STAY IN CE MODE. IT IS RECOMMENDED TO USE THIS SETTING WHEN ADJUSTING THIS DEVICE. TO START THE ROUTINE, SELECT THE CE PROGRAM SWITCH SETTINGS AND DEPRESS CE INTERRUPT.

3.5 TERMINATING PROCEDURE

TO TERMINATE THE PROGRAM AND RETURN THE DEVICE TO THE CUSTOMER-

A. SET THE CE PROGRAM SWITCHES TO 00001111 -CE SERVICE STOP. (THE ONLY REASON FOR USING THIS SETTING IS TO STOP ANY DEVICE ACTION WHICH MAY CAUSE AN INTERRUPT).
B. SET THE CE PROGRAM SWITCHES TO 11111111 -TERMINATOR SETTING, AND DEPRESS THE CE INTERRUPT LEVEL KEY ONCE AND ONLY ONCE. (A SECOND DEPRESSION OF THE CE INT. KEY WILL RESULT IN THE AUX DIAGNOSTIC LOADER TRYING TO LOAD A NEW PROGRAM IF THE READER IS READY.)

NOTE

TO OFFSET THE POSSIBILITY THAT THE INPUT DEVICE MIGHT BE MALFUNCTIONING THE NEXT TIME THE 1800 SYSTEM NEEDS SERVICING THE FOLLOWING PROGRAM SHOULD BE LOADED INTO AUX CORE AT THE CONCLUSION OF EACH SERVICE CALL -

A. CARD INPUT

LOAD THE AUX 1442 PACKED READ EXERCISE PROGRAM (PID 08AA) AFTER ASSURING THE PROGRAM IS IN BY PUNCHING CARDS, CE SWITCH SETTING 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING, TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

B. TAPE INPUT

LOAD THE AUX 1054/55 EXERCISE PROGRAM (PID 08A8). AFTER ASSURING THE PROGRAM IS IN BY PUNCHING TAPE, CE SWITCH SETTINGS 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

4. PRINTOUTS

THERE ARE NO PRINTOUTS IN THE AUX 1054/1055 EXERCISER PROGRAM. ERROR INFORMATION CAN BE OBTAINED BY COMPARING THE PUNCHED TAPE PRODUCED BY THE PROGRAM WITH THE SAMPLE TAPE SHOWN IN FIGURE 1.

5. COMMENTS

A PROGRAM MUST BE IN MAIN-CORE STORAGE AND MUST BE RUNNING OR READY TO START BEFORE THE AUX 1054/1055 EXERCISER PROGRAM CAN BE LOADED. ASSUMING THAT THE AFTER STARTING, THE PROGRAM SETS THE PAPER-TAPE DEVICE TO THE CE MODE AND SENSES THE CE PROGRAM SWITCHES TO DETERMINE THE ROUTINE THAT HAS BEEN SELECTED. IF A PROGRAM TERMINATOR (11111111) IS SENSED, A TRANSFER ADDRESS IN THE LOADER PROGRAM IS RESTORED TO ITS ORIGINAL CONTENTS. IN ADDITION, THE DEVICE STATUS WORD (DSW) OF THE 1054 AND 1055 UNITS IS CLEARED, THE CE MODE IS TURNED OFF, AND CONTROL IS RETURNED TO THE TERMINATOR IS NOT SENSED, THE 1054/1055 PROGRAM SENSES FOR A SELECTED-PUNCH ROUTINE (TABLE 1). IF A SELECTED-PUNCH ROUTINE IS SELECTED, THE SELECTED CHARACTER IS REPEATEDLY PUNCHED UNTIL ANOTHER CHARACTER IS SELECTED. IF NEITHER A PROGRAM TERMINATOR NOR A SELECTED-PUNCH ROUTINE IS SELECTED, THE DIAGNOSTIC PROGRAM EXECUTES ONE OF THE ROUTINES DISCUSSED IN THE FOLLOWING PARAGRAPHS.

5.1 PUNCH-ONE-COMPLETE-PATTERN-AND-STOP ROUTINE

THE PUNCH-ONE-COMPLETE-PATTERN-AND-STOP ROUTINE FIRST DETERMINES WHETHER OR NOT A FULL PATTERN OF CHARACTERS HAS BEEN PUNCHED BY THE CONTINUOUS-PUNCH-PATTERN ROUTINE. IF A FULL PATTERN HAS NOT BEEN PUNCHED, THE CONTINUOUS-PUNCH-PATTERN ROUTINE IS ALLOWED TO CONTINUE. AFTER A FULL PATTERN HAS BEEN PUNCHED, THE ROUTINE ALLOWS THE 1055 PAPER TAPE PUNCH TO BE STOPPED, THE DSW TO BE CLEARED.

5.2 CONTINUOUS-READ-NO-COMPARISON ROUTINE

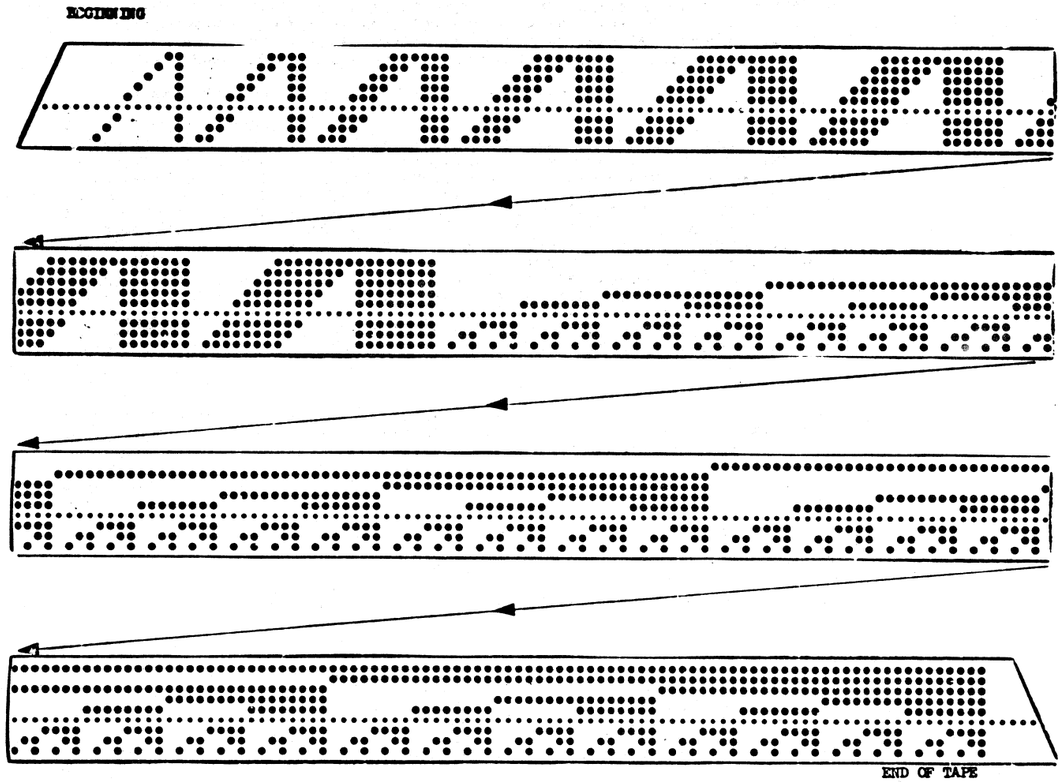
THE CONTINUOUS-READ-NO-COMPARISON ROUTINE CAUSES THE 1054 CHARACTER BUFFER AND THE TAPE TO BE CONTINUOUSLY READ. THIS ROUTINE CONTINUES UNTIL A NEW ROUTINE IS SELECTED OR UNTIL THE TAPE IS EXHAUSTED. (THE 1054 PAPER TAPE READER STOPS AUTOMATICALLY WHEN THE TAPE BEING READ IS EXHAUSTED.)

5.3 PUNCH READ/COMPARE ROUTINE

THE PUNCH READ/COMPARE ROUTINE USES A CHARACTER GENERATOR AND THE CHARACTER PATTERN THAT IS PUNCHED BY THE CONTINUOUS-PUNCH-PATTERN ROUTINE. EACH GENERATED CHARACTER IS PUNCHED. THE CHARACTER AT THE READ STATION IS SENSED, AND WHEN THE INTERRUPTS FROM THE 1054 AND 1055 OCCUR, THE READ BUFFER IS READ AND COMPARED WITH THE CHARACTER IN THE CHARACTER GENERATOR. IF THE CHARACTERS COMPARED ARE IDENTICAL, THE CHARACTER GENERATOR IS MODIFIED FOR THE NEXT CHARACTER AND THE PUNCH READ/COMPARE OPERATION IS REPEATED. IF THE CHARACTERS COMPARED ARE NOT IDENTICAL, THE 1054 AND 1055 UNITS ARE STOPPED AND THE PUNCHED TAPE AT THE READ STATION CAN BE VISUALLY COMPARED WITH THE PUNCHED TAPE AT THE PUNCH STATION. THIS COMPARISON NORMALLY INDICATES WHETHER THE ERROR WAS CAUSED BY THE 1054 OR 1055 UNIT.

5.4 DUPLICATE-TAPE ROUTINE

THE DUPLICATE-TAPE ROUTINE CAUSES THE READ BUFFER TO BE READ AND SETS THE CHARACTER THAT WAS READ INTO A PUNCH-OUTPUT LOCATION. THEN, PUNCH AND READ COMMANDS ARE ISSUED. UPON RECEIVING INTERRUPTS FROM THE 1054 AND 1055 UNITS, THE ROUTINE IS REPEATED. WHILE WAITING FOR INTERRUPTS, CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM. THIS ROUTINE CONTINUES UNTIL THE TAPE BEING READ IS EXHAUSTED OR A NEW ROUTINE IS SELECTED.



SAMPLE OUTPUT OF AUX 1054/55 PROGRAM.

```
028C                    ABS                                              8A800000
                        ORG     /3E                                      8A800010
                ********************************************************* 8A800020
                *                                                         8A800030
                *       IF THIS PROG IS TO BE USED FOR A MACHINE          8A800040
                * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH          8A800050
                * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST        8A800060
                * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A          8A800070
                * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG           8A800080
                * GENERATOR WRITE-UP FOR PROCEDURE.                       8A800090
                *                                                         8A8001C0
                ********************************************************* 8A800110
                *                                                         8A800120
                *                                                         8A800130
                *           1054-55 TAPE PROGRAM                          8A800140
                *           ********************                          8A800150
                *                                                         8A8C0160
                * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE        8A800170
                *                                                         8A800180
                *                                                         8A800190
                *                                                         8A8002C0
                *           CE SWITCH SETTINGS                            8A800210
                *                                                         8A800220
                *           COCCCOCO   FAREWELL SETTING                   8A800230
                *           COCOOOOI   PCH 1 PATTERN AND STOP             8A800240
                *           OOCOOOIO   CONTINOLS READ, NO COMPARE         8A800250
                *           COCOCOII   PUNCH-READ-COMPARE.                8A800260
                *           OOOOC1CO   REPRODUCE TAPE, NO COMPARE         8A800270
                *           COCOIIII   CE SERVICE STOP                    8A8C0280
                *           IIIIIIII   PROGRAM TERMINATOR                 8A800290
                *                                                         8A8003C0
                *                                                         8A800310
                *           IF ANY OF THE LEFT 5 CE SW ARE ON             8A800320
                *           * AND IT IS NOT A TERMINATOR OR A CE          8A800330
                *           * SERVICE STOP FOR SERVICE, A TAPE            8A800340
                *           * WILL BE PUNCHED ACCORDING TO THE            8A800350
                *           * CE SW SETTINGS AS SHOWN BELOW               8A800360
                *                                                         8A800370
                *             CE SWITCHES    X X X X X.X X X              8A800380
                *             CHANNEL PUNCH  8 7 6 5 4.3 2 1              8A800390
                *                                                         8A8004C0
                *           THE SPROCKET HOLE IS PUNCHED BETWEEN          8A800410
                *           * CHANNEL 3 AND 4                             8A800420
                *                                                         8A800430
                * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION        8A800440
                * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.              8A800450
                ********************************************************* 8A800460
                *                                                         8A80047C
                *           AUX PROG ENTRY POINTS                         8A800480
                *           *********************                         8A8004A0
                *                                                         8A8005C0
                *           1ST PASS ENTRY                                8A800510
                *                                                         8A800520
                * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN       8A8C0530
                * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER            8A800540
                *                                                         8A800550
0036 0  1000            NOP                                             8A800560
0037 0  1000            NOP                                             8A800565
0038 0  1000            NOP                                             8A800570
0039 0  1000            NOP                                             8A800575
003A 00 650070D7        LDX  L1 NNNN        RESTORE LOCATION NICE       8A8005E0
003C 00 6D000035        STX  L1 /35         * IN AUX LOADER             8A8C0550
                *                                                       8A8C0600
                *                                                       8A800610
                *           THE NEXT TWO WORDS WILL BE DESTROYED        8A800620
                *           * AFTER THE 1ST PASS AND WILL               8A800630
                *           * CONTAIN INTERRUPTS                        8A800640
                *                                                       8A800650
```



```
003E    0000            BSS  E  0                                       8A800660
003E 0  C045    REINT   LD      CTRLY       PLACE BRANCH                8A800670
003F 0  D0C4    PUINT   STO     /04         * TO RETUR LABEL            8A800680
                *       ********************************************    8A800690
                *                                                       8A8007C0
                *       ADD AREA CODE TO THE IOCC WORD                  8A800710
                *                                                       8A800720
0040 0  6108            LDX  1 11                                       8A800730
0041 0  C17C    BUILD   LD   1 CE0FF        GET IOCC WORD AND           8A800740
0042 0  E84C            OR     AREA         * OR IN AREA CODE           8A800750
0043 0  D17C            STO  1 CE0FF        * AND PLACE BACK            8A800760
0044 0  71FE            MDX  1 -2                                       8A800770
0045 0  70FB            MDX    BUILD                                    8A800780
                *                                                       8A800790
                *       ALL BUT 1ST PASS ENTRY POINT                    8A8008C0
                *                                                       8A800810
0046 0  0837    RETUR   XIO    CE0N                                     8A800820
0047 0  6A26            STX  2 SAVE2+1                                  8A800830
0048 0  6827            STX  3 SAVE3+1                                  8A800840
0049 0  10A0            SLT    32           CLEAR A AND Q               8A800850
004A 0  D8F3            STD    REINT        RD-PCH INTERRUPT            8A8008C0
004B 0  0834            XIO    DSW          SENSE DEVICE STATUS         8A800870
                *                                                       8A8C0880
004C 0  180C            SRA    12                                       8A8C0890
004D 0  4804            BSC    E                                        8A8009C0
004E 0  D0F0            STO    PUINT        STO NONZERO WD IF PU INT    8A800910
                *                                                       8A800920
004F 0  1802            SRA    2                                        8A800930
0050 0  4804            BSC    E                                        8A800940
0051 0  D0EC            STO    REINT        STO NONZERO WD IF RC INT    8A800950
                *                                                       8A800960
0052 0  0827            XIO    SENBI        SENSE CE SW TO ACCUM        8A8C0970
0053 0  E026            AND    SENBI        BLOCK OUT PROG SEL SW       8A8C0980
0054 00 4C18006A        BSC  L FAREW,+-     BR FAREWELL SETTING         8A8C0950
                *                                                       8A8010C0
0056 0  D027            STO    CE0N                                     8A801010
0057 0  F022            EOR    SENBI                                    8A801020
0058 00 4C180067        BSC  L NOTRD,+-     BR TERMINATE PROGRAM        8A801030
                *                                                       8A801040
005A 0  F01B            EOR    CKSTP                                    8A801050
005B 00 4C18006B        BSC  L KVIK,+-      BR CE SERVICE STOP          8A801060
                ********************************************************* 8A801070
                *                                                       8A801080
                *       SELECT ROUTINE                                  8A801090
                *                                                       8A8011C0
005D 00 6780007E        LDX  I3 CE0N        PICK ROUTINE                8A801110
005F 0  C01E            LD     CE0N         LOAD CE SW SETTINGS         8A801120
0060 0  1883            SRT    3                                        8A801130
0061 00 4F980090        BSC  I3 TABPU,+-    BR ON NC BITS               8A801140
                ********************************************************* 8A801150
                *                                                       8A801160
                *       ONE OR MORE OF LEFT 5 CE SW ON                  8A801170
                *       * PUNCH TAPE ACCORDING TO SW SETTINGS           8A801180
                *                                                       8A801190
0063 0  108B            SLT    11                                       8A8012C0
0064 0  D017            STO    CE0FF                                    8A801210
0065 0  081C            XIO    XIOXX                                    8A801220
0066 0  7006            MDX    SAVE2                                    8A801230
                ********************************************            8A801240
                *                                                       8A801250
                *       EXIT POINTS TO AUX LOADER                       8A801260
                *       *************************                       8A801270
                *                                                       8A801280
                *       TERMINATE EXIT POINT                            8A801290
                *                                                       8A8013C0
0067 0C 65000813 NOTRC  LDX  L1 WWWW                                    8A801310
0069 0  699A            STX    1 /04                                    8A801320
                *                                                       8A801330
```

```
                        *               FAREWELL EXIT POINT                     8A801340
                        *                                                       8A801350
006A 0  C811            FAREW XIO       CEOFF                                   8A801360
                        *                                                       8A801370
                        *               NORMAL EXIT POINT                       8A801380
                        *                                                       8A801390
006B 0  C81C            KVIK  LDD       KEYIN                                   8A8014C0
006C 0  D81F                  STD       INTER                                   8A801410
006D 00 66000000        SAVE2 LDX  L2 0                                         8A801420
006F 00 67000000        SAVE3 LDX  L3 0                                         8A801430
0071 0  709B                  MDX       QQQQ        EXIT TO AUX LOADER          8A801440
                        ********************************************************8A801450
                        *                                                       8A801460
                        *               CONSTANTS AND/OR IOCC WORDS             8A801470
                        *                                                       8A801480
0072    0000                  BSS  E    0                                       8A801490
0072 0  FF00            BITSX DC        /FFC0                                   8A8015C0
0073 0  0100            CNEEX DC        /0100                                   8A801510
0074 0  00CC                  DC        /00CC                                   8A801520
0075 0  00E0                  DC        /00E0                                   8A801530
0076 0  00F0            CKSTP DC        /00F0                                   8A801540
0077 0  00F8                  DC        /00F8                                   8A801550
0078 0  00FC                  DC        /00FC                                   8A801560
0079 0  00FE                  DC        /00FE                                   8A801570
007A 0  00FF            SENBI DC        /00FF       END COMMAND COMPARE         8A801580
007B 0  0760                  DC        /0760       SENSE CE SWITCHES           8A801590
007C 0  7F00            CEOFF DC        /7F00       PUNCH OUTPUT CHAR           8A8016C0
007D 0  0000                  DC        /0000       CE OFF WORD                 8A801610
007E 0  0000            CEON  DC        /0000       CHAR WORK LOC               8A801620
007F 0  0001                  DC        /0001       CE ON WORDD                 8A801630
0080 0  0000            DSW   DC        /0000       READ CHAR                   8A801640
0081 0  0701                  DC        /0701       SENSE DSW                   8A801650
0082 0  007C            XIOXX DC        CEOFF                                   8A801660
0083 0  010C                  DC        /0100       IOCC WORD (PUNCH)           8A801670
0084 0  7041            CTRLY DC        TTTT                                    8A801680
0085 0  0410                  DC        /0410       CTRL IOCC                   8A801690
0086 0  0080            XIOXY DC        DSW                                     8A8017C0
0087 0  0200                  DC        /0200       READ IOCC                   8A801710
0088 0  010F            KEYIN DC        /010F                                   8A801720
0089 0  020F                  DC        /020F                                   8A801730
008A 0  0000            KOUNX DC        /0000       END TEST OF RIPPLE RT       8A801740
008B 0  000C            COUNX DC        /0C00       WORK AREA                   8A801750
008C 0  FFFF            INTER DC        /FFFF                                   8A801760
008D 0  FFFF                  DC        /FFFF                                   8A801770
008E 0  7C03            FIFI  MDX  X    DIAGX-PUNCH-1   BUILT INSTRUCTION     8A801780
008F 0  1800            AREA  DC        /1800       1ST 1054/55 AREA CODE       8A801790
                        *                           * CHANGE THIS VALUE FOR A   8A8018C0
                        *                           * 1054/5 ON ANOTHER AREA    8A801810
                        *                                                       8A801820
0090 0  D0C3            TABPU STO  X    CEOFF-AT-1 BUILT INSTRUCTION            8A801830
0091 0  0098                  DC        PUNCH       STOP AFTER FULL PUNCH PAT   8A801840
0092 0  C0A2                  DC        READ        READ ONLY                   8A801850
0093 0  00A5                  DC        PURED       PCH READ COMP, HALT ON ERR  8A801860
0094 0  00C6                  DC        REPRO       REPRODUCE TAPE              8A801870
0095 0  006B                  DC        KVIK        CE SERVICE STOP             8A801880
0096 0  006B                  DC        KVIK        CE SERVICE STOP             8A801890
0097 0  006B                  DC        KVIK        CE SERVICE STOP             8A801900
                        ********************************************************8A801910
                        *                                                       8A801920
                        *               PUNCH 1 COMPLETE PATTERN AND STOP       8A801930
                        *                                                       8A801940
0098 0  7003            PUNCH MDX       DIAGX       THIS LOCATION IS NO-OPED    8A801950
0099 0  C0F4                  LD        FIFI        * PRIOR TO EXECUTION OF     8A801960
009A 0  D0FD                  STO       PUNCH       * LAST RIPPLE CHARACTER     8A801970
009B 0  70CF                  MDX       KVIK                                    8A801980
                        *                                                       8A801990
009C 00 65000001        DIAGX LDX  L1 1           REST DIAG TEST XR1          8A802000
009E 00 660000C0        CULP  LDX  L2 0                                         8A802010
```



```
00A0 00 4E8000F5        BSC  I2 WHOW                                           8A802020
                        ********************************************************8A802030
                        *                                                       8A802040
                        *               READ TAPE, NO COMPARE                   8A802050
                        *                                                       8A802060
00A2 0  08E3            READ  XIO       XIOXY       READ CHAR IN BUFFER         8A802070
00A3 0  08E0                  XIO       CTRLY       SET NEW CHAR IN BUFFER      8A802080
00A4 0  70C8                  MDX       SAVE2                                   8A802090
                        ********************************************************8A8021C0
                        *                                                       8A802110
                        *               PCH READ COMP, STOP ON ERROR            8A802120
                        *                                                       8A802130
00A5 0  C047            PURED LD        YEH+1                                   8A802140
00A6 0  D011                  STO       AT          PLACE NO-OP                 8A802150
00A7 0  C896            BUMP  LDD       REINT                                   8A802160
00A8 0  E8E3                  OR        INTER                                   8A802170
00A9 0  D0E2                  STO       INTER                                   8A802180
00AA 0  18D0                  RTE       16                                      8A802190
00AB 0  E8E1                  OR        INTER+1                                 8A802200
00AC 0  D0E0                  STO       INTER+1                                 8A802210
00AD 0  4820                  BSC       Z           SKIP NO PCH INT             8A802220
00AE 0  18D0                  RTE       16                                      8A802230
00AF 00 4C18006D              BSC  L    SAVE2,+-    BR NO READ INT              8A802240
                        *                                                       8A802250
                        *               BOTH INTERRUPTS RECEIVED                8A802260
                        *                                                       8A802270
00B1 0  C04B            LANG  LD        TEMPQ                                   8A802280
00B2 0  F0C7                  EOR       BITSX+8                                 8A802290
00B3 0  D049                  STO       TEMPQ                                   8A802300
00B4 00 4C0400BE              BSC  L    TANG,E                                  8A802310
                        *                                                       8A802320
00B6 0  08CF                  XIO       XIOXY                                   8A802330
00B7 0  C0C8                  LD        DSW                                     8A802340
00B8 0  D0C3            AT    STO       CEOFF       NO-OP OR STO                8A802350
00B9 0  F0C2                  EOR       CEOFF                                   8A802360
00BA 0  E0B7                  AND       BITSX                                   8A802370
00BB 00 4C18C0B1              BSC  L    LANG,+-     BR COMPARE OK               8A802380
00BD 0  70AF                  MDX       SAVE2                                   8A802390
                        ********************************************************8A8024C0
                        *                                                       8A802410
00BE 0  10A0            TANG  SLT       32                                      8A802420
00BF 0  D8CC                  STD       INTER                                   8A802430
00C0 0  08C3                  XIO       CTRLY                                   8A802440
00C1 0  70DA            ILS   MDX       DIAGX                                   8A802450
00C2 0  08BF                  XIO       XIOXX                                   8A802460
00C3 0  C037                  LD        AHH                                     8A802470
00C4 0  D0FC                  STO       ILS                                     8A802480
00C5 0  70A7            SKIP  MDX       SAVE2                                   8A802490
                        ********************************************************8A8025C0
                        *                                                       8A802510
                        *               REPRODUCE TAPE, NO COMPARE              8A802520
                        *                                                       8A802530
00C6 0  C0C9            REPRC LD        TABPU                                   8A802540
00C7 0  D0F0                  STO       AT                                      8A802550
00C8 0  C024                  LD        YEH+1                                   8A802560
00C9 0  D0F7                  STO       ILS                                     8A802570
00CA 0  70DC                  MDX       BUMP                                    8A802580
                        ********************************************************8A802590
                        *                                                       8A8026C0
                        *               CHARACTER GENERATOR                     8A802610
                        *               *******************                     8A802620
                        *                                                       8A802630
00CB 0  C172            NRIPX LD     1  BITSX       NEW RIPPLE ROUTINE          8A802640
00CC 0  D0AF                  STO       CEOFF                                   8A802650
00CD 0  6201                  LDX  2 1                                          8A802660
00CE 0  7022                  MDX       EXITX                                   8A802670
                        *                                                       8A802680
00CF 0  C0AC            SRIPX LD        CEOFF                                   8A802690
```

```
00D0 0  1001            SLA     1                                       8A802750
00D1 0  D0AA            STO     CEOFF                                   8A802710
00D2 0  482C            BSC     Z       SKIP NEXT CH NO BITS            8A802720
00D3 0  701D            MDX     EXITX                                   8A802730
00D4 0  6202            LDX   2 2                                       8A802740
00D5 0  C09C            LD      BITSX   PLACE ALL BIT CHAR              8A802750
00D6 0  D0A5            STO     CECFF   * IN OUTPUT LOC                 8A802760
00D7 0  6983            STX   1 COUNX                                   8A802770
                *                                                       8A802780
00D8 00 74FF008B  BARX  MDX   L COUNX,-1  SKIP WHEN COUNX GO 0          8A802790
00DA 0  7016            MDX     EXITX                                   8A8028C0
00DB 0  6200            LDX   2 0                                       8A802810
00DC 0  7101            MDX   1 1                                       8A802820
00DD 0  69AC            STX   1 KOUNX                                   8A802830
00DE 00 74F8008A        MDX   L KOUNX,-8  SKIP EXCEPT END RIPPE         8A802840
00E0 0  7001            MDX     ENRIX     BR TO END RIPPLE ROUT         8A802850
00E1 0  700F            MDX     EXITX     BR TO EXIT                    8A802860
                *                                                       8A802870
                *               END RIPPLE ROUT  PREPARE FOR ALL        8A802880
                *                        * BITS ROUTINE                 8A802890
00E2 0  6203    ENRIX LDX     2 3                                       8A802900
00E3 0  700D            MDX     EXITX                                   8A802910
                *                                                       8A802920
                *               ALL BITS ROUTINE                        8A802930
                *                                                       8A802940
00E4 0  C0A6    ALLBX LD        COUNX                                   8A802950
00E5 0  D096            STO     CECFF                                   8A802960
00E6 0  808C            A       ONEEX     ADD ONE I. E. 0100            8A802970
00E7 0  C0A3            STO     COUNX                                   8A802980
00E8 00 4C2000F1        BSC   L EXITX,Z                                 8A802950
                *                                                       8A803000
                *               END ALL BITS ROUTINE  PREPARE           8A803010
                *                        * FOR RIPPLE TEST              8A803020
00EA 00 4F8000F9        BSC   I3 ATA                                    8A803030
00EC 00 65001000  YEH   LDX   L1 /1000                                  8A803040
00EE 0  69A9            STX   1 PUNCH                                   8A803050
00EF 0  6101    LUNCH LDX     1 1         SET XR1 TO 1                  8A803060
00F0 0  6200            LDX   2 C                                       8A803070
00F1 0  69AB    EXITX STX     1 DIAGX+1                                 8A803080
00F2 0  6AAC            STX   2 DULP+1                                  8A803090
00F3 0  C88E            XIO     XIOXX                                   8A803100
00F4 0  70D0            MDX     SKIP                                    8A803110
                ********************************************          8A803120
                *                                                       8A803130
00F5 0  00CB    WHOW  DC        NRIPX                                   8A803140
00F6 C  COCF            DC      SRIPX                                   8A803150
00F7 0  00D8            DC      BARX                                    8A803160
00F8 0  C0E4            DC      ALLBX                                   8A803170
00F9 0  06EF    ATA   DC        LUNCH                                   8A803180
00FA 0  C0EC            DC      YEH                                     8A803190
00FB C  70DA    AHH   MDX   X DIAGX-ILS-1                               8A8032C0
00FC 0  00EF            DC      LUNCH                                   8A803210
00FD 0  0000    TEMPC DC        C                                       8A803220
                *                                                       8A803230
000D            CCCC  EQU       /D        GO TO LOADER AT /D            8A803240
70D7            NNNN  EQU       /7CD7     FOR CARD LOADER AT /35        8A803250
C813            WWWW  EQU       /CE13     SET IN LOADER AT /04          8A803260
7041            TTTT  EQU       /7C00+RETUR-/4-1    THIS IS EQUAL TO    8A803270
                *                         THE BRANCH FROM THE LOADER    8A803280
                *                         TO RETUR IN THIS PROGRAM.     8A803290
                ********************************************          8A8033C0
00FE    00FD            END     *-1       END CARD NEVER USED           8A803310
```


CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AHH	00FB	00C3
ALLBX	00E4	00F8
AREA	008F	0042
AT	0088	0090,00A6,00C7
ATA	00F9	00EA
BARX	00D8	00F7
BITSX	0072	0082,00BA,00CB,00D5
BUILD	0041	0045
BUMP	00A7	00CA
CCOFF	007C	0041,0043,0064,006A,0082,0090,0088,0089,00CC,00CF, 00D1,00D6,00E5
CEON	007E	0046,0056,005D,005F
CKSTP	0076	005A
COUNX	008B	00D7,00D8,00E4,00E7
CTRLY	0084	002E,00A3,00C0
DIAGX	009C	00EE,0098,00C1,00F1,00FB
DSW	0080	004B,0086,00B7
DULP	009E	00F2
ENRIX	00E2	00E0
EXITX	00F1	00CE,00D3,00DA,00E1,00E3,00E8
FAREW	006A	0054
FIFI	008E	0059
ILS	00C1	00C4,00C9,00FB
INTER	008C	00EC,00A8,00A9,00AB,00AC,00BF
KEYIN	0088	004B
KOUNX	008A	00CD,00DE
KVIK	006B	005B,0095,0096,0097,005B
LANG	00B1	00BB
LUNCH	00EF	00F9,00FC
NNNN	70D7	003A
NOTRD	0067	0058
NRIPX	00CB	00F5
ONEEX	0073	00E6
PUINT	003F	004E
PUNCH	0098	008E,0091,009A,00EE
PURED	00A5	0053
QCQC	000D	0071
READ	00A2	0052
REINT	003E	004A,0051,00A7
REPRO	00C6	0054
RETUR	0046	00FE
SAVE2	006D	0047,006E,00A4,00AF,00BD,00C5
SAVE3	006F	0048
SENBI	007A	0052,0053,0057
SKIP	00C5	00F4
SRIPX	00CF	00F6
TABPU	0090	00E1,00C6
TANG	00BE	00B4
TEMPC	00FD	00B1,00B3
TTTT	7041	00E4
WHOW	00F5	00A0
WWWW	0813	00E7
XIOXX	0082	0065,00C2,00F3
XIOXY	0086	00A2,00B6
YEH	00EC	00A5,00C8,00FA

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1. PURPOSE

THE PURPOSE OF THE AUX 1442 IMAGE READ EXERCISER PROGRAM IS TO TEST THE OPERATION OF THE 1442 CARD READ PUNCH USING THE IMAGE READ MODE.

2. PREREQUISITES

2.1 DEVICE AREA CODE

IF THE DEVICE TO BE TESTED USES A CUSTOMER ASSIGNED AREA CODE, A NEW AUX PROGRAM DECK OR PAPER TAPE MUST BE CREATED. THE PROCEDURE IS PRESENTED IN THE DOCUMENTATION OF THE AUX PROGRAM GENERATOR UTILITY (PID C8AC - CARD VERSION, PID 08AD - PAPER TAPE VERSION) THE PROGRAM LOCATIONS THAT MUST BE ALTERED ARE SPECIFIED BY A STATEMENT AT THE BEGINNING OF THE PROGRAM LISTING.

2.2 CARD INPUT

THE AUX DIAGNOSTIC LOADER (PID 08A1) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PROGRAM DECK CAN BE LOADED.

2.3 PAPER TAPE INPUT

THIS PROGRAM CAN NOT BE LOADED FROM PAPER TAPE.

3. USE PROCEDURE

BEFORE PROCEEDING, A PROGRAM MUST BE IN MAIN-CORE STORAGE RUNNING OR AT A WAIT INSTRUCTION READY TO START RUNNING.

3.1 CARD INPUT LOADING PROCEDURE

A. BE SURE THE 1442 IS AVAILABLE AND ALL CARDS ARE REMOVED.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT TWO TIMES TO ASSURE THE 1442 IS IN CE MODE.
D. PLACE THE SEVEN CARDS OF THE PROGRAM IN THE HOPPER OF THE 1442 AND ADD A BLANK CARD BEHIND THIS DECK.

NOTE

EACH PROGRAM CARD HAS A CHARACTER ENTERED INTO COLUMN 80. THIS CHARACTER DEFINES THE CARD'S POSITION IN THE DECK ACCORDING TO THE FOLLOWING SEQUENCE, X(FIRST), THEN 0, 1, 2, 3, 4, AND 5. THE CARDS CANNOT BE READ UNLESS THEY ARE PLACED IN THE HOPPER IN THE CORRECT ORDER.

ENSURE THAT ONLY ONE BLANK CARD IS PLACED BEHIND THE SEVEN-CARD PROGRAM DECK. IF TWO BLANK CARDS WERE PRESENT AND THE CE PROGRAM SWITCHES 14 AND 15 WERE OFF, THE FIRST BLANK CARD WOULD BE READ, CAUSING THE PROGRAM-LOADED PUNCH PATTERN TO BE DESTROYED.

E. DEPRESS 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
F. SELECT CE SWITCH SETTINGS FROM TABLE 1.
G. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO LOAD THE PROGRAM. IF THE HOPPER OF THE 1442 DOES NOT GO EMPTY THE CHECK-SUM ROUTINE IN THE AUX DIAGNOSTIC LOADER MOST LIKELY REJECTED THE PROGRAM. CHECK THE CARDS FOR PROPER SEQUENCE AND RETURN TO STEP (A) AND TRY AGAIN.

3.2 PAPER TAPE LOADING PROCEDURE

THIS PROGRAM CAN NOT BE LOADED FROM PAPER TAPE.

3.3 OPERATING PROCEDURE

THE CE PROGRAM SWITCH OPTIONS ARE SHOWN IN TABLE 1 AND THE COMMENTS FOUND THERE GIVES ADDITION INFORMATION ABOUT PROGRAM OPERATION. THE FOLLOWING TYPICAL OPERATING PROCEDURE DOES NOT, HOWEVER, PRESUPPOSE ANY KNOWLEDGE OF THE SWITCH OPTIONS GIVEN IN TABLE 1.

TYPICAL OPERATING PROCEDURE

THE AUX 1442 IMAGE READ PROGRAM CONTAINS A CARD-PUNCHING ROUTINE THAT CAN BE USED TO PUNCH BLANK CARDS WITH A PRE-PROGRAMED TEST PATTERN. IF THE PRE-PROGRAMED TEST PATTERN IS TO BE USED, PROCEED TO STEP (B) OTHERWISE, BEGIN WITH STEP (A).

A. TO ALTER THE PRE-PROGRAMED TEST PATTERN, PROCEED AS FOLLOWS-

1. SET CE PROGRAM SWITCHES TO 00000010.
2. DEPRESS NPRO PUSHBUTTON OF 1442 TO EJECT ANY CARDS LEFT IN THE MACHINE.
3. KEYPUNCH A CARD WITH A DESIRED PUNCH PATTERN. ENTER THE DESIRED PUNCH PATTERN INTO COLUMNS 1 THRU 40. PUNCHES IN ANY OTHER COLUMNS WILL BE IGNORED.
4. PLACE CARD CONTAINING DESIRED PUNCH PATTERN IN THE 1442 HOPPER AND ADD A BLANK CARD.
5. PRESS 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
6. DEPRESS CE LEVEL INTERRUPT (ON CE PANEL) TO LOAD PUNCH-PATTERN INFORMATION.
7. PROCEED TO STEP B.

B. EXECUTE PUNCH-TEST-CARD(S) ROUTINE AS FOLLOWS-

1. PRESS NPRO PUSHBUTTON OF 1442 TO EJECT ANY CARDS LEFT IN THE MACHINE.
2. PLACE BLANK CARDS INTO HOPPER OF 1442.
3. PRESS 1442 START PUSHBUTTON. THE READY INDICATOR SHOULD LIGHT.
4. SET CE PROGRAM SWITCHES TO C0000001.
5. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO START THE PUNCH-TEST-CARD ROUTINE.
6. AFTER THE 1442 STOPS PUNCHING, DEPRESS 1442 NPRO PUSHBUTTON TO EJECT ALL CARDS FROM THE MACHINE.

C. EXECUTE CARD/READ/COMPARE ROUTINE AS FOLLOWS-

1. REMOVE CARDS FROM STACKER 1 AND PLACE THEM INTO THE HOPPER.
2. PRESS 1442 START PUSHBUTTON. THE READY INDICATOR SHOULD LIGHT.
3. SET CE PROGRAM SWITCHES TO 00000011.
4. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO START THE CARD READ/COMPARE ROUTINE.
5. PROPER OPERATION OF THE CARD READ/COMPARE ROUTINE WILL RESULT IN A CONTINOUS CARD READ OPERATION UNTIL THE HOPPER IS EMPTY OR THE STOP KEY ON THE 1442 IS DEPRESSED. IF PUNCHING OCCURS A COMPARE ERROR WAS SENSED. REFER TO TABLE 1 FOR DETAILED DESCRIPTION OF THIS PARTICULAR ROUTINE.
6. TO RETURN THE 1442 TO THE CUSTOMER PROCEED TO SECTION 3.5

TABLE 1 CE PROGRAM SWITCH SETTINGS.

ROUTINE	CE PROGRAM SWITCHES 8 9 10 11 12 13 14 15	FUNCTION
PUNCH TEST CARD(S)	0 0 0 0 C 0 C 1	THIS SWITCH SETTING SELECTS A ROUTINE THAT CAUSES THE 1442 TO PUNCH A TEST PATTERN INTO COLUMNS 1 THROUGH 40 OF ANY NUMBER OF BLANK CARDS. THE TEST PATTERN PUNCHED MAY BE EITHER THE PROGRAM'S INTEGRAL TEST PATTERN OR AN OPERATOR-SELECTED TEST PATTERN. TO START THIS ROUTINE PLACE BLANK CARDS IN THE 1442 AND MAKE THE DEVICE READY. PRESS THE CE LEVEL INTERRUPT PUSHBUTTON TO SIGNAL THE 1442 TO START PUNCHING. THIS ROUTINE WILL CONTINUE UNTIL THE HOPPER IS EMPTY, STOP KEY ON THE 1442 IS DEPRESSED OR ANOTHER ROUTINE IS SELECTED.
READ CARD	0 0 0 0 0 C 1 0	THIS SWITCH SETTING SELECTS A ROUTINE THAT CAUSES THE 1442 TO READ A CARD (OR CARDS). THIS SETTING CAN BE USED TO READ CARDS (E.G., TO CHECK MACHINE OPERATION) OR TO MODIFY THE PRE-PROGRAMED TEST PATTERN. THE LAST CARD READ WILL DETERMINE THE PATTERN PUNCHED BY THE PUNCH TEST CARDS ROUTINE. TO START THIS ROUTINE MAKE THE 1442 READY AND DEPRESS CE LEVEL INTERRUPT. THIS ROUTINE WILL CONTINUE UNTIL THE HOPPER IS EMPTY, STOP KEY ON THE 1442 IS DEPRESSED OR ANOTHER ROUTINE IS SELECTED.

CARD READ/ COMPARE	0 0 0 0 0 0 1 1	THIS SWITCH SETTING SELECTS A ROUTINE THAT CAUSES THE 1442 TO READ CARDS PUNCHED BY THE PUNCH-TEST-CARD ROUTINE AND COMPARE THEM WITH THE STORED TEST PATTERN. IF READING OR PUNCHING ERRORS ARE DETECTED, THE DATA READ FROM COLUMNS 1 THROUGH 40 ARE PUNCHED INTO COLUMNS 41 THROUGH 80 OF THE SAME CARD. THE CARDS CONTAINING ERRORS ARE THEN SORTED INTO STACKER 2. ALL OTHER CARDS ARE SORTED INTO STACKER 1. TO START THE ROUTINE PLACE THE PUNCHED TEST CARDS IN THE 1442 HOPPER AND MAKE THE DEVICE READY. DEPRESS THE CE LEVEL INTERRUPT PUSHBUTTON TO START THE PROGRAM. THIS ROUTINE WILL CONTINUE UNTIL THE HOPPER IS EMPTY, STOP KEY ON THE 1442 IS DEPRESSED OR ANOTHER ROUTINE IS SELECTED.
CE SERVICE STOP	0 0 0 0 1 1 1 1	THIS SWITCH SETTING CAUSES THE 1442 PROGRAM TO STOP BUT DOES NOT TERMINATE THE PROGRAM. IT IS RECOMMENDED TO USE THIS SETTING WHEN ADJUSTING THIS DEVICE. TO START THE ROUTINE, SELECT THE CE PROGRAM SWITCH SETTINGS AND DEPRESS CE INTERRUPT BUTTON.
PROGRAM TERMINATOR	1 1 1 1 1 1 1 1	THIS SWITCH SETTING SELECTS A ROUTINE THAT TERMINATES THE 1442 IMAGE READ DIAGNOSTIC PROGRAM AND RELEASES THE DEVICE TO THE CUSTOMER. (THIS SETTING IS THE SAME FOR ALL AUXILIARY-STORAGE EXERCISER PROGRAMS.) THIS ROUTINE MUST BE USED BEFORE A NEW PROGRAM CAN BE LOADED INTO AUX STORAGE. CAUTION- FOLLOW THE TERMINATING PROCEDURE IN SECTION 3.5.

3.4 CE SERVICE STOP

THIS SWITCH SETTING WILL NOT TERMINATE THE PROGRAM BUT IT WILL CAUSE THE DEVICE TO STOP AND STAY IN CE MODE. IT IS RECOMMENDED TO USE THIS SETTING WHEN ADJUSTING THIS DEVICE. TO START THE ROUTINE, SELECT THE CE PROGRAM SWITCH SETTINGS AND DEPRESS CE INTERRUPT.

3.5 TERMINATING PROCEDURE

TO TERMINATE THE PROGRAM AND RETURN THE DEVICE TO THE CUSTOMER-

A. SET THE CE PROGRAM SWITCHES TO 00001111 -CE SERVICE STOP. (THE ONLY REASON FOR USING THIS SETTING IS TO STOP ANY DEVICE ACTION WHICH MAY CAUSE AN INTERRUPT).
B. SET THE CE PROGRAM SWITCHES TO 11111111 -TERMINATOR SETTING, AND DEPRESS THE CE INTERRUPT LEVEL PUSHBUTTON ONCE AND ONLY ONCE. (A SECOND DEPRESSION OF THE CE INT. PUSHBUTTON WILL WILL RESULT IN THE AUX DIAGNOSTIC LOADER TRYING TO LOAD A NEW PROGRAM IF THE 1442 IS READY).

NOTE

TO OFFSET THE POSSIBILITY THAT THE INPUT DEVICE MIGHT BE MALFUNCTIONING THE NEXT TIME THE 1800 SYSTEM NEEDS SERVICING THE FOLLOWING PROGRAM SHOULD BE LOADED INTO AUX CORE AT THE CONCLUSION OF EACH SERVICE CALL -

LOAD THE AUX 1442 PACKED READ EXERCISE PROGRAM (PID 08AA) AFTER ASSURING THE PROGRAM IS IN BY PUNCHING CARDS, CE SWITCH SETTING 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING, TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

4. PRINTOUTS

THE AUX 1442 IMAGE READ EXERCISER PROGRAM DOES NOT PRODUCE PRINTOUTS. HOWEVER, THE RESULTS OF THE CARD-PUNCHING TEST CAN BE DETERMINED BY COMPARING THE CARDS PUNCHED BY THE PUNCH-TEST-CARD ROUTINE WITH THE PROGRAM'S INTEGRAL TEST PATTERN OR THE ALTERNATE TEST PATTERN SELECTED BY THE PROGRAM OPERATOR. THE RESULTS OF THE CARD READ/COMPARE ROUTINE ARE DETERMINED BY FIRST CHECKING FOR ERROR CARDS IN STACKER 2 OF THE 1442 AND THEN COMPARING THE ORIGINAL PUNCHES IN COLUMNS 1 THROUGH 40 WITH THE REPRODUCED PUNCHES IN COLUMNS 41 THROUGH 80. THE COMPARISON SHOULD INDICATE WHAT DATA WERE NOT READ OR PUNCHED CORRECTLY.

5. COMMENTS

A PROGRAM MUST BE IN MAIN-CORE STORAGE AND MUST BE RUNNING OR READY TO START BEFORE THE AUX 1442 IMAGE READ EXERCISER PROGRAM CAN BE LOADED. ASSUMING THAT THE AUX DIAGNOSTIC LOADER IS PRESENT IN AUXILIARY-STORAGE AND THE SEVEN CARDS AND ONE BLANK OF THE 1442 PROGRAM ARE IN THE HOPPER OF THE 1442 READY TO BE READ, DEPRESSING THE CE LEVEL INTERRUPT PUSHBUTTON CAUSES THE PROGRAM TO BE STORED.

THE 1442 PROGRAM CONTAINS A PRE-PROGRAMED TEST PATTERN THAT CAN BE USED TO PUNCH BLANK CARDS WITH A TEST PATTERN. IF DESIRED, THE PROGRAM OPERATOR MAY ALTER THE PRE-PROGRAMED TEST PATTERN. FIRST, A CARD IS PUNCHED WITH THE DESIRED PATTERN. THEN, THE TEST-PATTERN CARD IS PLACED INTO THE HOPPER OF THE 1442 ALONG WITH A BLANK CARD, THE READ-CARD ROUTINE IS SELECTED, AND THE 1442 PROGRAM IS ENTERED.

UPON BEING ENTERED, THE 1442 PROGRAM TURNS ON THE CE MODE, CLEARS THE DSW, AND SENSES THE CE PROGRAM SWITCHES. IF THE PROGRAM SENSES A PROGRAM TERMINATOR (11111111), IT SETS A BRANCH VECTOR IN THE LOADER TO TERMINATE THE 1442 PROGRAM AND TURNS OFF THE CE MODE. CONTROL IS THEN RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM. IF THE 1442 PROGRAM DOES NOT SENSE A PROGRAM TERMINATOR, THE PROGRAM EXECUTES THE SELECTED ROUTINE (E.G., READ-CARD ROUTINE).

5.1 PUNCH-TEST-CARD ROUTINE

PLACE BLANK CARDS INTO THE 1442'S HOPPER, SELECT THE PUNCH-TEST-CARD ROUTINE AND EXECUTE THE ROUTINE. THE ROUTINE CAUSES THE 1442 TO PUNCH A TEST PATTERN INTO COLUMNS 1 THROUGH 40 OF EACH CARD PLACED IN THE HOPPER. AFTER THE PUNCHING OF EACH CARD, CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM.

5.2 READ-CARD ROUTINE

THE READ-CARD ROUTINE SIMPLY READS A TEST-PATTERN CARD AND STORES THE DATA. THIS DATA MAY THEN BE USED TO PUNCH CARDS (REFER TO 5.1)

5.3 CARD-READ/COMPARE ROUTINE

IF DESIRED, THE PROGRAM OPERATOR CAN PLACE THE CARDS PUNCHED BY THE PUNCH-TEST-CARD ROUTINE IN THE 1442 HOPPER AND SELECT THE CARD-READ/COMPARE ROUTINE. THIS ROUTINE CAUSES THE 1442 TO READ THE CARDS PUNCHED BY THE PUNCH-TEST-CARD ROUTINE AND COMPARE THEM WITH THE STORED TEST PATTERN. IF READING OR PUNCHING ERRORS ARE DETECTED, THE DATA READ FROM COLUMNS 1 THROUGH 40 ARE PUNCHED INTO COLUMNS 41 THROUGH 80 OF THE SAME CARD. THE CARDS CONTAINING ERRORS ARE THEN SELECTED INTO STACKER 2. ALL OTHER CARDS ARE STACKED INTO STACKER 1. AFTER EACH CARD IS FINISHED, CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM.

6. APPENDIX

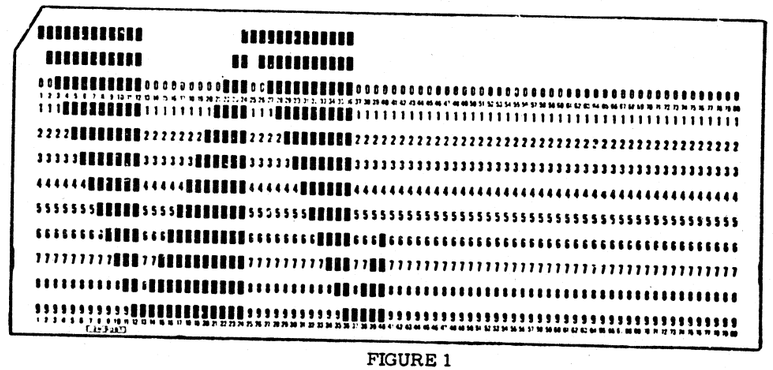

FIGURE 1
SAMPLE OUTPUT OF AUX 1442 IMAGE READ PROGRAM.

```
                    ABS
                    ORG     /36                                          8A900000
02BC                ********************************************************** 8A900010
                    *                                                      8A900020
                    *       IF THIS PROG IS TO BE USED FOR A MACHINE       8A900030
                    * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH       8A900040
                    * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST     8A900050
                    * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A       8A900060
                    * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG       8A900070
                    * GENERATOR WRITE-UP FOR PROCEDURE.                   8A900080
                    *                                                      8A900090
                    ********************************************************** 8A900100
                    *                                                      8A900110
                    *                                                      8A900120
                    *                                                      8A900130
                    *           1442 AUX PROGRAM                           8A900140
                    *           (IMAGE READ FORMAT)                        8A900150
                    *           ********************                       8A900160
                    *                                                      8A900170
                    *                                                      8A900180
                    * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE          8A900190
                    *                                                      8A900200
                    *                                                      8A900210
                    *           CE SWITCH SETTINGS                         8A900220
                    *                                                      8A900230
                    *           00000001   PUNCH TEST CARDS                8A900240
                    *           00000010   READ CARDS IMAGE MODE           8A900250
                    *           00000011   READ COMPARE. PUNCH AND         8A900260
                    *                      * SELECT NON COMPARE CARD       8A900270
                    *           00001111   CE SERVICE STOP                 8A900280
                    *           11111111   PROGRAM TERMINATOR              8A900290
                    *                                                      8A900300
                    * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION     8A900310
                    * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.           8A900320
                    ********************************************************** 8A900330
                    *                                                      8A900340
                    *           AUX PROG ENTRY POINTS                      8A900350
                    *           *********************                      8A900360
                    *                                                      8A900370
                    *           1ST PASS ENTRY                             8A900380
                    *                                                      8A900390
0036 0  7077        BEGIN MDX   DUTAB                                      8A900400
                    *                                                      8A900410
                    *           ALL BUT 1ST PASS ENTRY POINT               8A900420
                    *                                                      8A900430
0037 0  081C        RETUR XIO   CEON                                       8A900440
0038 0  081D              XIO   DSW                                        8A900450
0039 0  0816              XIO   SENBI     SENSE CE SW TO ACCUM             8A900460
003A 0  E015              AND   SENBI     BLOCK OUT PROGRAM SEL SW         8A900470
0038 0  F014              EOR   SENBI                                      8A900480
003C 00 4C18004B          BSC  L NOTRD,+- BR TERMINATE PROGRAM             8A900490
                    *                                                      8A900500
003E 0  F013              EOR   CEOFF                                      8A900510
003F 00 4C18004F          BSC  L SAVE2,+- CK CE SERVICE STOP               8A900520
                    ********************************************************** 8A900530
                    *                                                      8A900540
                    *           SELECT DESIRED ROUTINE                     8A900550
                    *                                                      8A900560
0041 0  E014              AND   DSW                                        8A900570
0042 0  0001              STO   GO+1                                       8A900580
0043 00 65000000    GO    LDX  L1 0                                        8A900590
0045 00 4D800047          BSC   I1 TABPU                                   8A900600
                    *                                                      8A900610
                    *           ROUTINE SELECTED XFER VECTORS              8A900620
                    *                      * TABLE INVERTED                8A900630
                    *                                                      8A900640
0047 0  0062        TABPU DC    PUREZ       RD PCH COMP, SEL ERR           8A900650
0048 0  0084              DC    READZ       READ CARDS                     8A900660
0049 0  0080              DC    PUCOZ       PUNCH CARDS                    8A900670
```



```
004A 0  004F              DC    SAVE2     CE SERVICE STOP                8A900680
                    ********************************************************** 8A900690
                    *                                                      8A900700
                    *           EXIT POINTS TO AUX LOADER                  8A900710
                    *           *************************                  8A900720
                    *                                                      8A900730
                    *           TERMINATE EXIT POINT                       8A900740
                    *                                                      8A900750
0048 00 65000813    NOTRD LDX   L1 WWWW                                    8A900760
004D 0  6986              STX   1 /04                                      8A900770
004E 0  0803              XIO   CEOFF                                      8A900780
                    *                                                      8A900790
                    *           NORMAL EXIT POINT                          8A900800
                    *                                                      8A900810
004F 0  70BD        SAVE2 MDX   QQQQ        EXIT TO AUX LOADER             8A900820
                    *                                                      8A900830
                    ********************************************************** 8A900840
                    *                                                      8A900850
                    *           CONSTANTS AND/OR IOCC WORDS                8A900860
                    *                                                      8A900870
0050    0000              BSS   E 0                                        8A900880
0050 0  00FF        SENBI DC    /00FF       TERMINATOR CONST               8A900890
0051 0  0760              DC    /0760       SENCE BIT SWITCHES             8A900900
0052 0  00F0        CEOFF DC    /00F0       CONSTANT                       8A900910
0053 0  0000              DC    /0000       CE OFF IOCC                    8A900920
0054 0  0008        CEON  DC    /0008       PCH TERM BIT                   8A900930
0055 0  0001              DC    /0001       CE ON IOCC                     8A900940
0056 0  0003        DSW   DC    /0003       CONSTANT                       8A900950
0057 0  0701              DC    /0701       DSW IOCC                       8A900960
0058 0  7009        STACK MDX   X RQSA-PUREZ-1    CONSTANT ONLY            8A900970
0059 0  0480              DC    /0480       STACKER SELECT IOCC            8A900980
005A 0  0086        READA DC    RETAB                                      8A900990
005B 0  0600              DC    /0600       READ CARD IMAGE IOCC           8A901000
005C 0  00AE        REED  DC    DUTAB                                      8A901010
005D 0  0600              DC    /0600       READ CARD IMAGE IOCC           8A901020
005E 0  0086        PUNCH DC    RETAB                                      8A901030
005F 0  0500              DC    /0500       PUNCH CARD IOCC                8A901040
0060 0  00AE        PUCH  DC    DUTAB                                      8A901050
0061 0  0500              DC    /0500       PUNCH CARD IOCC                8A901060
                    *                                                      8A901070
                    ********************************************************** 8A901080
                    *                                                      8A901090
                    *           READ COMPARE ROUTINE                       8A901100
                    *                                                      8A901110
0062 0  7009        PUREZ MDX   RQSA        BR OR NO OP INST.              8A901120
                    *                                                      8A901130
                    *           COMPARE 1ST 39 WORDS JUST READ             8A901140
                    *           * AGAINST 39 WORDS STORED IN RETAB         8A901150
                    *                                                      8A901160
0063 0  6127              LDX   1 39                                       8A901170
0064 00 C50000AD    CTCOP LD    L1 DUTAB-1                                 8A901180
0066 00 F5000085          EOR   L1 RETAB-1                                 8A901190
0068 00 4C200070          BSC  L NONCP,Z  BR WORDS DO NOT COMPARE          8A901200
006A 0  71FF              MDX   1 -1                                       8A901210
006B 0  70F8              MDX   CTCOP                                      8A901220
                    ********************************************************** 8A901230
                    *                                                      8A901240
                    *           READ CARD FOR READ COMPARE ROUTINE         8A901250
                    *                                                      8A901260
006C 0  08EF        RQSA  XIO   REED                                       8A901270
006D 0  C007              LD    IT          PLACE NO OP                    8A901280
006E 0  D0F3        SOS   STO   PUREZ       *                              8A901290
006F 0  70DF              MDX   SAVE2                                      8A901300
                    ********************************************************** 8A901310
                    *                                                      8A901320
                    *           TABLES DID NOT COMPARE                     8A901330
                    *           SET UP PUNCH TABLE                         8A901340
                    *                                                      8A901350
```

```
0070 0  6128        NONCP LDX   1 40                                  8A901360
0071 00 C50000AD    GOOD  LD    L1 DUTAB-1                            8A901370
0073 00 D50000D5          STO   L1 PUTAB-1                            8A901380
0075 0  1010        IT    SLA     16                                  8A901390
0076 00 D50000AD          STO   L1 DUTAB-1                            8A901400
0078 0  71FF              MDX   1 -1                                  8A901410
0079 0  70F7              MDX     GOOD                                8A901420
                    *                                                 8A901430
007A 00 740800FD          MDX   L  PUTAB+39,8 SET PUNCH TERMINATOR    8A901440
007C 0  08DB              XIO     STACK       SELECT STACKER          8A901450
007D 0  08E2              XIO     PUCH                                8A901460
007E 0  C0D9              LD      STACK                               8A901470
007F 0  70EE              MDX     SOS                                 8A901480
                    ************************************************* 8A901490
                    *                                                 8A901500
                    *             PUNCH TEST DECK                     8A901510
                    *             SET PUNCH TERMINATOR                8A901520
                    *                                                 8A901530
0080 0  C02C        PUCOZ LD      RETAB+39                            8A901540
0081 0  E8D2              OR      CEON        PCH TERM BIT            8A901550
0082 0  D02A              STO     RETAB+39                            8A901560
0083 0  08DA              XIO     PUNCH       PUNCH CARDS             8A901570
                    *     MDX     SAVE2       THE FOLL XIO WILL ACT   8A901580
                    *                         * AS A NO OP INST.      8A901590
                    *                                                 8A901600
                    ************************************************* 8A901610
                    *                                                 8A901620
                    *             READ CARDS IN IMAGE MODE            8A901630
0084 0  08D5        READZ XIO     READA       READ IMAGE MODE         8A901640
0085 0  70C9              MDX     SAVE2                               8A901650
                    ************************************************* 8A901660
                    *                                                 8A901670
                    *             READ AND PUNCH TEST DECK TABLE      8A901680
                    *             * CONTAINS AN INITAL PUNCH PATTERN  8A901690
                    *                                                 8A901700
0086 0  8000        RETAB DC      /8000                               8A901710
0087 0  C000              DC      /C000                               8A901720
0088 0  E000              DC      /E000                               8A901730
0089 0  F000              DC      /F000                               8A901740
008A 0  F800              DC      /F800                               8A901750
008B 0  FC00              DC      /FC00                               8A901760
008C 0  FE00              DC      /FE00                               8A901770
008D 0  FF00              DC      /FF00                               8A901780
008E 0  FF80              DC      /FF80                               8A901790
008F 0  FFC0              DC      /FFC0                               8A901800
0090 0  FFE0              DC      /FFE0                               8A901810
0091 0  FFF0              DC      /FFF0                               8A901820
0092 0  0010              DC      /0010                               8A901830
0093 0  0030              DC      /0030                               8A901840
0094 0  0070              DC      /0070                               8A901850
0095 0  00F0              DC      /00F0                               8A901860
0096 0  01F0              DC      /01F0                               8A901870
0097 0  03F0              DC      /03F0                               8A901880
0098 0  07F0              DC      /07F0                               8A901890
0099 0  0FF0              DC      /0FF0                               8A901900
009A 0  1FF0              DC      /1FF0                               8A901910
009B 0  3FF0              DC      /3FF0                               8A901920
009C 0  7FF0              DC      /7FF0                               8A901930
009D 0  FFF0              DC      /FFF0                               8A901940
009E 0  8000              DC      /8000                               8A901950
009F 0  C000              DC      /C000                               8A901960
00A0 0  E000              DC      /E000                               8A901970
00A1 0  F000              DC      /F000                               8A901980
00A2 0  F800              DC      /F800                               8A901990
00A3 0  FC00              DC      /FC00                               8A902000
00A4 0  FE00              DC      /FE00                               8A902010
00A5 0  FF00              DC      /FF00                               8A902020
00A6 0  FF80              DC      /FF80                               8A902030
```



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00A7 0  FFC0              DC      /FFC0                               8A902040
00A8 0  FFE0              DC      /FFE0                               8A902050
00A9 0  FFF0              DC      /FFF0                               8A902060
00AA 0  0010              DC      /0010                               8A902070
00AB 0  0030              DC      /0030                               8A902080
00AC 0  0070              DC      /0070                               8A902090
00AD 0  00F8              DC      /00F8       CONTAINS PUNCH TERNINATOR 8A902100
                    ************************************************* 8A902110
                    *                                                 8A902120
                    *             THE INFO IN THIS TABLE IS USED ONCE 8A902130
                    *             ON THE FIRST TIME. AFTER THAT THIS  8A902140
                    *             WILL CONTAIN THE LAST HALF OF A CARD 8A902150
                    *             THAT WAS READ.                      8A902160
                    *                                                 8A902170
00AE 00 650070D7    DUTAB LDX   L1 NNNN       RESTORE LOC NICE        8A902180
00B0 00 6D000035          STX   L1 /35        * IN AUX LOADER         8A902190
00B2 00 65007032          LDX   L1 TTTT       PLACE BRANCH            8A902200
00B4 00 6D000004          STX   L1 /04        * TO RETUR LABEL        8A902210
                    ************************************************* 8A902220
                    *                                                 8A902230
                    *             ADD AREA CODE TO THE I/O COMMANDS   8A902240
                    *                                                 8A902250
0086 0  610F              LDX     1 15                                8A902260
00B7 0  C152        BUILD LD      1 CEOFF     GET IOCC WORD AND       8A902270
00B8 0  E805              OR      AREA        * OR IN AREA AND        8A902280
00B9 0  D152              STO     1 CEOFF     * PLACE BACK            8A902290
00BA 0  71FE              MDX     1 -2                                8A902300
00BB 0  70FB              MDX     BUILD                               8A902310
                    *                                                 8A902320
00BC 00 4C000037          BSC   L RETUR                               8A902330
                    *                                                 8A902340
00BE 0  1000        AREA  DC      /1000       1ST 1442 AREA CODE      8A902350
                    *                         * CHANGE THIS VALUE     8A902360
                    *                         * FOR A 1442 ON ANOTHER AR 8A902370
                    *                                                 8A902380
00BF    0017              BSS     23          REST OF READ AREA       8A902390
                    *                                                 8A902400
                    ************************************************* 8A902410
                    *                                                 8A902420
                    *                         PUNCH TABLE             8A902430
00D6    0028        PUTAB BSS     40                                  8A902440
                    *                                                 8A902450
                    ************************************************* 8A902460
                    *                                                 8A902470
000D                QQQQ  EQU     /D          GO TO LOADER AT /D      8A902480
70D7                NNNN  EQU     /70D7       FOR CARD LOADER AT /35  8A902490
0813                WWWW  EQU     /0813       SET IN LOADER AT /04    8A902500
7032                TTTT  EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO 8A902510
                    *                         THE BRANCH FROM THE LOADER 8A902520
                    *                         TO RETUR IN THIS PROGRAM. 8A902530
                    ************************************************* 8A902540
00FE    00FD              END     *-1         END CARD NEVER USED     8A902550
```

AUX 1442 IMAGE READ EXERCISER

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	00BE	0088
BUILD	0087	008B
CEOFF	0052	003E,004E,0087,00B9
CEON	0054	0037,0081
CTCOP	0064	0068
DSW	0056	0038,0041
DUTAB	00AE	0036,005C,0060,0064,0071,0076
GO	0043	0042
GOOD	0071	0079
IT	0075	006D
NNNN	70D7	00AE
NONCP	0070	0068
NOTRD	004B	003C
PUCH	0060	007D
PUCOZ	0080	0049
PUNCH	005E	0083
PUREZ	0062	0047,0058,006E
PUTAB	00D6	0073,007A
QQQQ	000D	004F
READA	005A	0084
READZ	0084	0048
REED	005C	006C
RETAB	0086	005A,005E,0066,0080,0082
RETUR	0037	00BC,00FE
RQSA	006C	0058,0062
SAVE2	004F	003F,004A,006F,0085
SENBI	0050	0039,003A,003B
SOS	006E	007F
STACK	0058	007C,007E
TABPU	0047	0045
TTTT	7032	0082
WWWW	0813	0048

0 0 0

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1. PURPOSE

THE PURPOSE OF THE AUX 1442 PACKED READ EXERCISER PROGRAM IS TO TEST THE OPERATION OF THE 1442 CARD READ PUNCH USING THE 8-8 READ MODE.

2. PREREQUISITES

2.1 DEVICE AREA CODE

IF THE DEVICE TO BE TESTED USES A CUSTOMER ASSIGNED AREA CODE, A NEW AUX PROGRAM DECK OR PAPER TAPE MUST BE CREATED. THE PROCEDURE IS PRESENTED IN THE DOCUMENTATION OF THE AUX PROGRAM GENERATOR UTILITY (PID 08AC - CARD VERSION, PID C8AD - PAPER TAPE VERSION) THE PROGRAM LOCATIONS THAT MUST BE ALTERED ARE SPECIFIED BY A STATEMENT AT THE BEGINNING OF THE PROGRAM LISTING.

2.2 CARD INPUT

THE AUX DIAGNOSTIC LOADER (PID 0841) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PROGRAM DECK CAN BE LOADED.

3. USE PROCEDURES

BEFORE PROCEEDING, A PROGRAM MUST BE IN MAIN-CORE STORAGE RUNNING OR AT A WAIT INSTRUCTION READY TO START RUNNING.

3.1 CARD INPUT LOADING PROCEDURE

A. BE SURE THE 1442 IS AVAILABLE AND ALL CARDS ARE REMOVED.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT TWO TIMES TO ASSURE THE 1442 IS IN CE MODE.
D. PLACE THE SEVEN CARDS OF THE AUX 1442 EXERCISER PROGRAM IN THE HOPPER OF THE 1442 AND FOLLOW WITH A BLANK CARD.

NOTE

EACH PROGRAM CARD HAS A CHARACTER ENTERED INTO COLUMN 80. THIS CHARACTER DEFINES THE CARD'S POSITION IN THE DECK ACCORDING TO THE FOLLOWING SEQUENCE, X(FIRST), THEN 0, 1, 2, 3, 4, AND 5. THE CARDS CANNOT BE READ UNLESS THEY ARE PLACED IN THE HOPPER IN THE CORRECT ORDER.

E. DEPRESS THE 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
F. PLACE ALL CE PROGRAM SWITCHES IN THEIR OFF POSITION.
G. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO LOAD THE PROGRAM. (IF THE HOPPER OF THE 1442 DOES NOT GO EMPTY THE CHECK-SUM ROUTINE IN THE AUX DIAGNOSTIC LOADER MOST LIKELY REJECTED THE PROGRAM. CHECK THE CARDS FOR PROPER SEQUENCE AND RETURN TO STEP A AND TRY AGAIN).
H. GO TO SECTION 3.3

3.2 FAREWELL SETTING

TO OFFSET THE POSSIBILITY THAT THE 1442 MIGHT BE MALFUNCTIONING THE NEXT TIME THE 1800 SYSTEM IS SERVICED, IT IS SUGGESTED THAT THE 1442 8-8 READ DIAGNOSTIC PROGRAM BE LEFT IN A READY-TO-BE-RUN CONDITION IN AUXILIARY STORAGE. THE READY-TO-BE-RUN CONDITION IS SELECTED BY MEANS OF THE FAREWELL SETTING AS FOLLOWS-

A. SET CE PROGRAM SWITCHES TO 00C00000.
B. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO ENTER FAREWELL SETTING WHICH RELEASES THE DEVICE TO THE CUSTOMER.

CAUTION

DO NOT SELECT PROGRAM TERMINATOR (11111111) AFTER SELECTING THE FAREWELL SETTING. THE PROGRAM TERMINATOR WILL NEGATE THE FAREWELL SETTING.

3.3 OPERATING PROCEDURE

TYPICAL OPERATING PROCEDURE

THE AUX 1442 PACKED READ PROGRAM CONTAINS A CARD-PUNCHING ROUTINE THAT CAN BE USED TO PUNCH BLANK CARDS WITH A PRE-PROGRAMED TEST PATTERN. IF THE PRE-PROGRAMED TEST PATTERN IS TO BE USED, PROCEED TO STEP (B) OTHERWISE, BEGIN WITH STEP (A).

A. TO ALTER THE PRE-PROGRAMED TEST PATTERN, PROCEED AS FOLLOWS-

1. SET CE PROGRAM SWITCHES TO 00000010.
2. DEPRESS NPRO PUSHBUTTON OF 1442 TO EJECT ANY CARDS LEFT IN THE MACHINE.
3. KEYPUNCH A CARD WITH A DESIRED PUNCH PATTERN. ENTER THE DESIRED PUNCH PATTERN INTO ROWS 12 THROUGH 5 OF COLUMNS 1 THROUGH 40. PUNCHES IN ANY OTHER ROWS AND COLUMNS WILL BE IGNORED.
4. PLACE CARD CONTAINING DESIRED PUNCH PATTERN IN THE 1442 HOPPER AND ADD A BLANK CARD.
5. PRESS 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
6. DEPRESS CE LEVEL INTERRUPT (ON CE PANEL) TO LOAD PUNCH-PATTERN INFORMATION.
7. PROCEED TO STEP B.

B. EXECUTE PUNCH-TEST-CARD(S) ROUTINE AS FOLLOWS-

1. PRESS NPRO PUSHBUTTON OF 1442 TO EJECT ANY CARDS LEFT IN THE MACHINE.
2. PLACE BLANK CARDS INTO HOPPER OF 1442.

3. PRESS 1442 START PUSHBUTTON. THE READY INDICATOR SHOULD LIGHT.
4. SET CE PROGRAM SWITCHES TO 00000001.
5. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO START THE PUNCH-TEST-CARD ROUTINE.
6. AFTER THE 1442 STOPS PUNCHING, DEPRESS 1442 NPRO PUSHBUTTON TO EJECT ALL CARDS FROM THE MACHINE.

C. EXECUTE CARD/READ/COMPARE ROUTINE AS FOLLOWS-

1. REMOVE CARDS FROM STACKER 1 AND PLACE THEM INTO THE HOPPER.
2. PRESS 1442 START PUSHBUTTON. THE READY INDICATOR SHOULD LIGHT.
3. SET CE PROGRAM SWITCHES TO 00000011.
4. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO START THE CARD READ/COMPARE ROUTINE.
5. PROPER OPERATION OF THE CARD READ/COMPARE ROUTINE WILL RESULT IN A CONTINOUS CARD READ OPERATION UNTIL THE HOPPER IS EMPTY OR THE STOP KEY ON THE 1442 IS DEPRESSED. IF PUNCHING OCCURS A COMPARE ERROR WAS SENSED. REFER TO TABLE 1 FOR DETAILED DESCRIPTION OF THIS PARTICULAR ROUTINE.

NOTE

DISREGARD ANY COMPARE ERROR PUNCHING IN THE FIRST CARD. IF PUNCHING OCCURS, THROW THE CARD AWAY.

6. TO RETURN THE 1442 TO THE CUSTOMER PROCEED TO SECTION 3.5

TABLE 1. CE PROGRAM SWITCH SETTINGS

ROUTINE	CE PROGRAM SWITCHES 8 9 10 11 12 13 14 15	FUNCTION
		PROGRAM OPERATOR MAY ALTER THE PRE-PROGRAMED TEST PATTERN. FIRST, A CARD IS PUNCHED WITH THE DESIRED PATTERN. THEN, THE TEST-PATTERN CARD IS PLACED INTO THE HOPPER OF THE 1442 ALONG WITH A BLANK CARD, THE READ-CARD ROUTINE IS SELECTED, AND THE 1442 PROGRAM IS ENTERED.
FAREWELL SETTING	0 0 0 0 0 0 0 0	THIS FAREWELL SETTING WILL REMOVE THE DEVICE FROM CE MODE BUT WILL LEAVE THE 1442 PACKED READ PROGRAM READY TO BE USED.
PUNCH TEST CARD(S)	0 0 0 0 0 0 0 1	THIS SWITCH SETTING SELECTS A ROUTINE THAT CAUSES THE 1442 TO PUNCH A TEST PATTERN INTO COLUMNS 1 THROUGH 40 OF ANY NUMBER OF BLANK CARDS. THE TEST PATTERN PUNCHED MAY BE EITHER THE PROGRAM'S INTEGRAL TEST PATTERN OR AN OPERATOR-SELECTED TEST PATTERN. TO START THIS ROUTINE PLACE BLANK CARDS IN THE 1442 AND MAKE THE DEVICE READY. PRESS THE CE LEVEL INTERRUPT PUSHBUTTON TO SIGNAL THE 1442 TO START PUNCHING. THIS ROUTINE WILL CONTINUE UNTIL THE HOPPER IS EMPTY, STOP KEY ON THE 1442 IS DEPRESSED OR ANOTHER ROUTINE IS SELECTED.

READ CARD	0 0 0 0 0 0 1 0	THIS SWITCH SETTING SELECTS A ROUTINE THAT CAUSES THE 1442 TO READ A CARD (OR CARDS). THIS SETTING CAN BE USED TO READ CARDS (E.G., TO CHECK MACHINE OPERATION) OR TO MODIFY THE PRE-PROGRAMED TEST PATTERN. THE LAST CARD READ WILL DETERMINE THE PATTERN PUNCHED BY THE PUNCH TEST CARDS ROUTINE. TO START THIS ROUTINE MAKE THE 1442 READY AND DEPRESS CE LEVEL INTERRUPT. THIS ROUTINE WILL CONTINUE UNTIL THE HOPPER IS EMPTY, STOP KEY ON THE 1442 IS DEPRESSED OR ANOTHER ROUTINE IS SELECTED.
CARD READ/ COMPARE	0 0 0 0 0 0 1 1	THIS SWITCH SETTING SELECTS A ROUTINE THAT CAUSES THE 1442 TO READ CARDS PUNCHED BY THE PUNCH-TEST-CARD ROUTINE AND COMPARE THEM WITH THE STORED TEST PATTERN. IF READING OR PUNCHING ERRORS ARE DETECTED, THE DATA READ FROM COLUMNS 1 THROUGH 40 ARE PUNCHED INTO COLUMNS 41 THROUGH 80 OF THE SAME CARD. THE CARDS CONTAINING ERRORS ARE THEN SORTED INTO STACKER 2. ALL OTHER CARDS ARE SORTED INTO STACKER 1. TO START THE ROUTINE PLACE THE PUNCHED TEST CARDS IN THE 1442 HOPPER AND MAKE THE DEVICE READY. DEPRESS THE CE LEVEL INTERRUPT PUSHBUTTON TO START THE PROGRAM. THIS ROUTINE WILL CONTINUE UNTIL THE HOPPER IS EMPTY, STOP KEY ON THE 1442 IS DEPRESSED OR ANOTHER ROUTINE IS SELECTED. NOTE DISREGARD ANY COMPARE ERROR PUNCHING IN THE FIRST CARD. IF PUNCHING OCCURS, THROW THE CARD AWAY.
CE SERVICE STOP	0 0 0 0 1 1 1 1	THIS SWITCH SETTING CAUSES THE 1442 PROGRAM TO STOP BUT DOES NOT TERMINATE THE PROGRAM. IT IS RECOMMENDED TO USE THIS SETTING WHEN ADJUSTING THIS DEVICE. TO START THE ROUTINE, SELECT THE CE PROGRAM SWITCH SETTINGS AND DEPKESS CE INTERRUPT BUTTON.
PROGRAM TERMINATOR	1 1 1 1 1 1 1 1	THIS SWITCH SETTING SELECTS A ROUTINE THAT TERMINATES THE 1442 8-8 READ DIAGNOSTIC PROGRAM AND RELEASES THE DEVICE TO THE CUSTOMER. (THIS SETTING IS THE SAME FOR ALL AUXILIARY-STORAGE EXERCISER PROGRAMS.) THIS ROUTINE MUST BE USED BEFORE A NEW PROGRAM CAN BE LOADED INTO AUX STORAGE.
	CAUTION	FOLLOW THE TERMINATING PROCEDURE IN SECTION 3.5

3.4 CE SERVICE STOP

THIS SWITCH SETTING WILL NOT TERMINATE THE PROGRAM BUT IT WILL CAUSE THE DEVICE TO STOP AND STAY IN CE MODE. IT IS RECOMMENDED TO USE THIS SETTING WHEN ADJUSTING THIS DEVICE. TO START THE ROUTINE, SELECT THE CE PROGRAM SWITCH SETTINGS AND DEPRESS CE INTERRUPT.

3.5 TERMINATING PROCEDURE

TO TERMINATE THE PROGRAM AND RETURN THE DEVICE TO THE CUSTOMER-

A. SET THE CE PROGRAM SWITCHES TO 00001111 -CE SERVICE STOP (THE ONLY REASON FOR USING THIS SETTING IS TO STOP ANY DEVICE ACTION WHICH MAY CAUSE AN INTERRUPT).
B. SET THE CE PROGRAM SWITCHES TO 11111111 -TERMINATOR SETTING, AND DEPRESS THE CE INTERRUPT LEVEL KEY ONCE AND ONLY ONCE. (A SECOND DEPRESSION OF THE CE INT. KEY WILL RESULT IN THE AUX DIAGNOSTIC LOADER TRYING TO LOAD A NEW PROGRAM IF THE 1442 IS READY).

4. PRINTOUTS

THE AUX 1442 PACKED READ EXERCISER PROGRAM DOES NOT PRODUCE PRINTOUTS. HOWEVER, THE RESULTS OF THE CARD-PUNCHING TEST CAN BE DETERMINED BY COMPARING THE CARDS PUNCHED BY THE PUNCH-TEST-CARD ROUTINE WITH THE PROGRAM'S INTEGRAL TEST PATTERN OR THE ALTERNATE TEST PATTERN SELECTED BY THE PROGRAM OPERATOR. THE RESULTS OF THE CARD READ/COMPARE ROUTINE ARE DETERMINED BY FIRST CHECKING FOR ERROR CARDS IN STACKER 2 OF THE 1442 AND THEN COMPARING THE ORIGINAL PUNCHES IN COLUMNS 1 THROUGH 40 WITH THE REPRODUCED PUNCHES IN COLUMNS 41 THROUGH 80. THE COMPARISON SHOULD INDICATE WHAT DATA WERE NOT READ OR PUNCHED CORRECTLY.

5. COMMENTS

A PROGRAM MUST BE IN MAIN-CORE STORAGE AND MUST BE RUNNING OR READY TO START BEFORE THE AUX 1442 PACKED READ EXERCISER PROGRAM CAN BE LOADED. ASSUMING THAT THE AUX DIAGNOSTIC LOADER IS PRESENT IN AUXILIARY-STORAGE AND THE SEVEN CARDS OF THE 1442 PROGRAM ARE IN THE HOPPER OF THE 1442 READY TO BE READ, DEPRESSING THE CE LEVEL INTERRUPT PUSHBUTTON CAUSES THE PROGRAM TO BE STORED.

THE 1442 PROGRAM CONTAINS A PRE-PROGRAMED TEST PATTERN THAT CAN BE USED TO PUNCH BLANK CARDS WITH A TEST PATTERN. IF DESIRED, THE PROGRAM OPERATOR MAY ALTER THE PUNCH PATTERN. IF THE PROGRAM SENSES A CONTROL IS THEN RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM. IF THE 1442 PROGRAM DOES NOT SENSE A PROGRAM TERMINATOR, THE PROGRAM EXECUTES THE SELECTED ROUTINE (E.G., READ-CARD ROUTINE).

5.1 PUNCH-TEST-CARD ROUTINE

PLACE BLANK CARDS INTO THE 1442'S HOPPER, SELECT THE PUNCH-TEST-CARD ROUTINE AND EXECUTE THE ROUTINE. THE ROUTINE CAUSES THE 1442 TO PUNCH A TEST PATTERN INTO COLUMNS 1 THROUGH 40 OF EACH BLANK CARD PLACED IN THE HOPPER.

5.2 READ-CARD ROUTINE

THE READ-CARD ROUTINE SIMPLY READS A TEST-PATTERN CARD AND STORES THE DATA. THIS DATA MAY THEN BE USED TO PUNCH CARDS. (REFER TO 5.1).

5.3 CARD-READ/COMPARE ROUTINE

IF DESIRED, THE PROGRAM OPERATOR CAN PLACE THE CARDS PUNCHED BY THE PUNCH-TEST-CARD ROUTINE IN THE 1442 HOPPER AND SELECT THE CARD-READ/COMPARE ROUTINE. THIS ROUTINE CAUSES THE 1442 TO READ THE CARDS PUNCHED BY THE PUNCH-TEST-CARD ROUTINE AND COMPARE THEM WITH THE STORED TEST PATTERN. IF READING OR PUNCHING ERRORS ARE DETECTED, THE DATA READ FROM COLUMNS 1 THROUGH 40 ARE PUNCHED INTO COLUMNS 41 THROUGH 80 OF THE SAME CARD. THE CARDS CONTAINING ERRORS ARE THEN SELECTED INTO STACKER 2. ALL OTHER CARDS ARE STACKED INTO STACKER 1.

6. APPENDIX

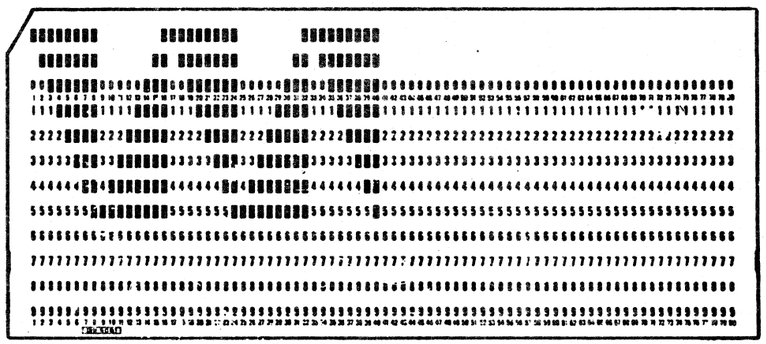

FIGURE 1

SAMPLE OUTPUT FROM AUX 1442 PACKED READ PROGRAM.

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

AUX 1442 PACKED READ EXERCISER

```
                    ABS                                                  8AA00000
                    ORG     /36                                          8AA00010
0286                ********************************************************** 8AA00020
                    *                                                    8AA00030
                    *       IF THIS PROG IS TO BE USED FOR A MACHINE     8AA00040
                    * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH      8AA00050
                    * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST    8AA00060
                    * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A      8AA00070
                    * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG       8AA00080
                    * GENERATOR WRITE-UP FOR PROCEDURE.                   8AA00090
                    *                                                    8AA00100
                    ********************************************************** 8AA00110
                    *                                                    8AA00120
                    *                                                    8AA00130
                    *            1442 AUX PROGRAM                        8AA00140
                    *            (PACKED READ FORMAT)                    8AA00150
                    *            **********************                  8AA00160
                    *                                                    8AA00170
                    * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE         8AA00180
                    *                                                    8AA00190
                    *                                                    8AA00200
                    *            CE SWITCH SETTINGS                      8AA00210
                    *                                                    8AA00220
                    *            00000000   FAREWELL SETTING, SEE NOTE   8AA00230
                    *            00000001   PUNCH TEST CARDS             8AA00240
                    *            00000010   READ CARDS IN 8-8 FORMAT     8AA00250
                    *                       * DATA OF LAST CARD READ     8AA00260
                    *                       * USED FOR TEST CARD         8AA00270
                    *                       * PUNCH PATTERN              8AA00280
                    *            00000011   READ COMPARE. PUNCH AND       8AA00290
                    *                       * SELECT NON COMPARE CARD    8AA00300
                    *            00001111   CE SERVICE STOP               8AA00310
                    *            11111111   PROGRAM TERMINATOR            8AA00320
                    *                                                    8AA00330
                    *                                                    8AA00340
                    *            NOTE                                    8AA00350
                    *                                                    8AA00360
                    *               BY USING THE FAREWELL SETTING THE    8AA00370
                    *            CE WILL BE ABLE TO START UP THIS PROG   8AA00380
                    *            AGAIN WITHOUT FIRST HAVING TO READ IN   8AA00390
                    *            THE AUX 8-8 PROG DECK. THIS PROGRAM     8AA00400
                    *            SHOULD BE THE LAST AUX PROGRAM LOADED   8AA00410
                    *            UPON FINISHING A SERVICE CALL, IN       8AA00420
                    *            ORDER THAT IT MAY LATER ON BE           8AA00430
                    *            REACTIVATED IF THE 1442 NEED SERVICE    8AA00440
                    *                                                    8AA00450
                    *                                                    8AA00460
                    * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION    8AA00470
                    * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.          8AA00480
                    ********************************************************** 8AA00490
                    *                                                    8AA00500
                    *            AUX PROG ENTRY POINTS                   8AA00510
                    *            **********************                  8AA00520
                    *                                                    8AA00530
                    *            1ST PASS ENTRY                          8AA00540
                    *                                                    8AA00550
0036 0  7015        BEGIN MDX    DUTAB                                   8AA00560
                    *                                                    8AA00570
                    *            ALL BUT 1ST PASS ENTRY POINT            8AA00580
                    *                                                    8AA00590
0037 0  706D        RETUR MDX    CONT                                    8AA00600
                    ********************************************************** 8AA00610
                    *                                                    8AA00620
                    *            READ TABLE FOR PACKED DATA WHICH        8AA00630
                    *            * CONTAINS AN INITAL PUNCH PATTERN      8AA00640
                    *                                                    8AA00650
0038    0000        KEEP  BSS  E 0                                       8AA00660
0038 0  C080        RETAB DC     /C080      IF NEW DATA HAS BEEN         8AA00670
```


AUX 1442 PACKED READ EXERCISER

```
0039 0  F0E0                DC     /F0E0      READ IN IT WILL BE        8AA00680
003A 0  FCF8                DC     /FCF8      IN THIS TABLE IN          8AA00690
003B 0  FFFE                DC     /FFFE      PACKED FORM.              8AA00700
003C 0  0301                DC     /0301                                8AA00710
003D 0  0F07                DC     /0F07                                8AA00720
003E 0  3F1F                DC     /3F1F                                8AA00730
003F 0  FF7F                DC     /FF7F                                8AA00740
0040 0  C080                DC     /C080                                8AA00750
0041 0  F0E0                DC     /F0E0                                8AA00760
0042 0  FCF8                DC     /FCF8                                8AA00770
0043 0  FFFE                DC     /FFFE                                8AA00780
0044 0  0301                DC     /0301                                8AA00790
0045 0  0F07                DC     /0F07                                8AA00800
0046 0  3F1F                DC     /3F1F                                8AA00810
0047 0  FF7F                DC     /FF7F                                8AA00820
0048 0  C080                DC     /C080                                8AA00830
0049 0  F0E0                DC     /F0E0                                8AA00840
004A 0  FCF8                DC     /FCF8                                8AA00850
0048 0  FFFE                DC     /FFFE                                8AA00860
                    ********************************************************** 8AA00870
                    *                                                    8AA00880
                    *            THE INFO IN THS TABLE IS USED ONCE      8AA00890
                    *            ON THE FIRST TIME THRU. AFTER THAT IT   8AA00900
                    *            CONTAINS THE SECOND HALF OF THE CARD    8AA00910
                    *            THAT WAS READ. THIS TABLE WILL BE       8AA00920
                    *            ZERO WHEN PUNCHING.                     8AA00930
                    *                                                    8AA00940
004C 00 65007007    DUTAB LDX    L1 NNNN    RESTORE LOCATION NICE     8AA00950
004E 00 6D000035          STX    L1 /35     * IN AUX LOADER           8AA00960
0050 00 65007032          LDX    L1 TTTT    PLACE BRANCH              8AA00970
0052 00 6D000004          STX    L1 /04     * TO RETUR LABEL          8AA00980
                    *                                                    8AA00990
0054 0  610F              LDX    1 15                                 9AA01000
0055 00 C50000EA    BUILD LD     L1 CEOFF   GET IOCC WORD             8AA01010
0057 0  E806              OR     AREA       * OR IN AREA AND          8AA01020
0058 00 D50000EA          STO    L1 CEOFF   * STORE IN IOCC WORD      8AA01030
005A 0  71FE              MDX    1 -2                                 8AA01040
0058 0  70F9              MDX    BUILD                                8AA01050
005C 00 4C000037          BSC    L  RETUR                             8AA01060
                    *                                                    8AA01070
005E 0  1000        AREA  DC     /1000      1ST 1442 AREA CODE        8AA01080
                    *                       * CHANGE THIS VALUE       8AA01090
                    *                       * FOR A 1442 ON ANOTHER   8AA01100
                    *                       * AREA CODE.              8AA01110
                    *                                                 8AA01120
005F    0015              BSS    21         REST OF READ AREA         8AA01130
                    *                                                 8AA01140
                    ********************************************************** 8AA01150
                    *                                                 8AA01160
                    *            PUNCH TABLE FOR PACKED DATA          8AA01170
0074    0028        PUTAB BSS    40                                   8AA01180
                    ********************************************************** 8AA01190
                    *                                                 8AA01200
                    *            EXIT POINTS TO AUX LOADER            8AA01210
                    *            **************************           8AA01220
                    *                                                 8AA01230
                    *            TERMINATE EXIT POINT                 8AA01240
                    *                                                 8AA01250
009C 00 65000813    NOTRD LDX    L1 WWWW                              8AA01260
009E 00 6D000004          STX    L1 /04                               8AA01270
                    *                                                 8AA01280
                    *            FAREWELL EXIT POINT                  8AA01290
                    *                                                 8AA01300
00A0 0  0849        FAREW XIO    CEOFF                                8AA01310
                    *                                                 8AA01320
                    *            NORMAL EXIT POINT                    8AA01330
                    *                                                 8AA01340
00A1 00 66000000    SAVE2 LDX    L2 0                                 8AA01350
```

```
00A3 00 4C000000D       BSC  L  QQQQ       EXIT TO AUX LOADER          8AA01360
                        ********************************************** 8AA01370
                        *                                              8AA01380
                        *                                              8AA01390
00A5 0  0846    CONT    XIO      CEON                                  8AA01400
00A6 0  6AFB            STX   2  SAVE2+1                               8AA01410
00A7 0  0846            XIO      DSW        SENSE DSW                  8AA01420
00A8 0  083F            XIO      SENBI      SENSE CE SWITCHES          8AA01430
00A9 0  E03E            AND      SENBI      BLOCK OUT PROGRAM SEL SW   8AA01440
00AA 00 4C1800A0        BSC  L   FAREW,+-   BR FAREWELL SETTING        8AA01450
                        *                                              8AA01460
00AC 0  F038            EOR      SENBI                                 8AA01470
00AD 00 4C18009C        BSC  L   NOTRD,+-   BR TERMINATE PROGRAM        8AA01480
                        *                                              8AA01490
00AF 0  F03A            EOR      CEOFF                                 8AA01500
00B0 00 4C1800A1        BSC  L   SAVE2,+-   BR CE SERVICE STOP         8AA01510
                        ********************************************** 8AA01520
                        *                                              8AA01530
                        *            SELECT DESIRED ROUTINE            8AA01540
                        *                                              8AA01550
00B2 0  E038            AND      DSW                                   8AA01560
00B3 0  D001            STO      GO+1                                  8AA01570
00B4 00 65000000    GO  LDX  L1  0                                     8AA01580
00B6 00 4D8000FA        BSC  I1  TABPU                                 8AA01590
                        *                                              8AA01600
                        *            READ CARDS IN PACKED MODE         8AA01610
                        *                                              8AA01620
00B8 0  0839    READZ  XIO       READA      READ PACKED MODE           8AA01630
00B9 0  C036           LD        STACK                                 8AA01640
00BA 0  D001           STO       PUREZ                                 8AA01650
00BB 0  70E5           MDX       SAVE2                                 8AA01660
                        ********************************************** 8AA01670
                        *                                              8AA01680
                        *            READ COMPARE ROUTINE              8AA01690
                        *                                              8AA01700
00BC 0  7007    PUREZ  MDX       RQSA       BR OR NO OP INST.          8AA01710
                        *                                              8AA01720
                        *            COMPARE 1ST 20 WORDS JUST READ    8AA01730
                        *            * AGAINST 20 WORDS STORED IN RETAB 8AA01740
                        *                                              8AA01750
00BD 0  6114           LDX   1  20                                     8AA01760
00BE 0  C173    CTCOP  LD    1  PUTAB-1                                8AA01770
00BF 0  F137           EOR   1  RETAB-1                                8AA01780
00C0 00 4C2000C8       BSC  L   NONCP,Z    BR WORDS DO NOT COMPARE    8AA01790
00C2 0  71FF           MDX   1  -1                                     8AA01800
00C3 0  70FA           MDX      CTCOP                                  8AA01810
                        ********************************************** 8AA01820
                        *                                              8AA01830
                        *            READ CARD FOR READ COMPARE ROUTINE 8AA01840
                        *                                              8AA01850
00C4 0  0833    RQSA   XIO       REED       READ PACKED MODE           8AA01860
00C5 0  C018           LD        IT         PLACE NO OP                8AA01870
00C6 0  D0F5    SOS    STO       PUREZ                                 8AA01880
00C7 0  70D9           MDX       SAVE2                                 8AA01890
                        ********************************************** 8AA01900
                        *                                              8AA01910
                        *            TABLES DID NOT COMPARE            8AA01920
                        *            * CLEAR DUTAB TABLE               8AA01930
                        *                                              8AA01940
00C8 0  6128    NONCP  LDX   1  40                                      8AA01950
00C9 0  10A0           SLT      32                                     8AA01960
00CA 0  D94A    STOL   STD   1  DUTAB-2                                 8AA01970
00CB 0  71FE           MDX   1  -2                                     8AA01980
00CC 0  70FD           MDX      STOL                                   8AA01990
                        *                                              8AA02000
                        *            SET UP PUNCH TABLE                8AA02010
                        *                                              8AA02020
00CD 00 65000087       LDX  L1  PUTAB+19                               8AA02030
00CF 0  4009           BSI      CONVT      CALL TO SET UP TABLE TO
```



```
                        *                    PCH 2ND HALF OF THE CARD  8AA02040
00D0 0  081F            XIO      STACK       SELECT STACKER            8AA02050
00D1 0  0824            XIO      PUCH                                  8AA02060
00D2 0  C01D            LD       STACK                                 8AA02070
00D3 0  70F2            MDX      SOS                                   8AA02080
                        ********************************************** 8AA02090
                        *                                              8AA02100
                        *            PUNCH TEST DECK                   8AA02110
                        *                                              8AA02120
00D4 00 65000048    PUCOZ LDX  L1  RETAB+19                            8AA02130
00D6 0  4002            BSI      CONVT      CALL TO SET UP TABLE      8AA02140
00D7 0  081C            XIO      PUNCH      PUNCH CARDS               8AA02150
00D8 0  70C8            MDX      SAVE2                                8AA02160
                        ********************************************** 8AA02170
                        *                                              8AA02180
                        *            CHANGE CARD READ TO PUNCH FORMAT  8AA02190
                        *            * EXPAND 1ST 20 WORDS TO 40 WORDS 8AA02200
                        *                                              8AA02210
00D9 0  0000    CONVT  DC    0                                         8AA02220
00DA 0  6228           LDX   2  40                                     8AA02230
00DB 0  10A0    CONTR  SLT      32                                     8AA02240
00DC 0  C100           LD    1  0                                      8AA02250
00DD 0  1888           SRT      8                                     8AA02260
00DE 0  1808    IT     SLA      8                                     8AA02270
00DF 0  18D0           RTE      16                                    8AA02280
00E0 0  DA72           STD   2  PUTAB-2                               8AA02290
00E1 0  71FF           MDX   1  -1                                    8AA02300
00E2 0  72FE           MDX   2  -2                                    8AA02310
00E3 0  70F7           MDX      CONTR                                 8AA02320
00E4 00 74080098       MDX  L   PUTAB+39,8  SET PUNCH TERMINATOR       8AA02330
00E6 00 4C8000D9       BSC  I   CONVT                                 8AA02340
                        ********************************************** 8AA02350
                        *                                              8AA02360
                        *            CONSTANTS AND/OR IOCC WORDS       8AA02370
                        *                                              8AA02380
00E8    0000            BSS  E   0                                     8AA02390
00E8 0  00FF    SENBI  DC        /00FF      TERMINATOR CONST          8AA02400
00E9 0  0760           DC        /0760      SENSE CE SWITCHES         8AA02410
00EA 0  00F0    CEOFF  DC        /00F0      CONSTANT                  8AA02420
00EB 0  0000           DC        /0000      CE OFF IOCC               8AA02430
00EC 0  0000    CEON   DC        0                                    8AA02440
00ED 0  0001           DC        /0001      CE ON IOCC                8AA02450
00EE 0  0003    DSW    DC        /0003                                8AA02460
00EF 0  0701           DC        /0701      SENSE DSW IOCC            8AA02470
00F0 0  7007    STACK  MDX   X   RQSA-PUREZ-1   CONSTANT ONLY         8AA02480
00F1 0  0480           DC        /0480      STACKER SELECT IOCC       8AA02490
00F2 0  0038    READA  DC        RETAB                                8AA02500
00F3 0  0601           DC        /0601      READ PACKED IOCC          8AA02510
00F4 0  0074    PUNCH  DC        PUTAB                                8AA02520
00F5 0  0500           DC        /0500      PUNCH IOCC                8AA02530
00F6 0  004C    PUCH   DC        DUTAB                                8AA02540
00F7 0  0500           DC        /0500      PUNCH IOCC                8AA02550
00F8 0  0074    REED   DC        PUTAB                                8AA02560
00F9 0  0601           DC        /0601      READ PACKED IOCC          8AA02570
                        ********************************************** 8AA02580
                        *                                              8AA02590
                        *            ROUTINE SELECTED XFER VECTORS     8AA02600
                        *            * TABLE INVERTED                  8AA02610
                        *                                              8AA02620
                        *                                              8AA02630
00FA 0  00BC    TABPU  DC        PUREZ      RD PCH COMP, SEL ERR      8AA02640
00FB 0  00B8           DC        READZ      READ CARDS IN 8-8 MODE    8AA02650
00FC 0  00D4           DC        PUCOZ      PUNCH CARDS IN 8-8 FORMAT 8AA02660
00FD 0  00A0           DC        FAREW      FAREWELL SETTING          8AA02670
                        *                                              8AA02680
000D            QQQQ   EQU       /D         GO TO LOADER AT /D        8AA02690
70D7            NNNN   EQU       /70D7      FOR CARD LOADER AT /35    8AA02700
0813            WWWW   EQU       /0813      SET IN LOADER AT /04      8AA02710
7032            TTTT   EQU       /7000+RETUR-/4-1    THIS IS EQUAL TO
```

```
                    *                       THE BRANCH FROM THE LOADER 8AA02720
                    *                       TO RETUR IN THIS PROGRAM.  8AA02730
                    ********************************************************* 8AA02740
00FE    00FD              END     *-1       END CARD NEVER USED        8AA02750
```


CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	005E	0057
BUILD	0055	005B
CEOFF	00EA	0055,0058,00A0,00AF
CEON	00EC	00A5
CONT	00A5	0037
CONTR	00DB	00E3
CONVT	00D9	00CF,00D6,00E6
CTCOP	00BE	00C3
DSW	00EE	00A7,00B2
DUTAB	004C	0036,00CA,00F6
FAREW	00A0	00AA,00FD
GO	00B4	00B3
IT	00DE	00C5
KEEP	0038	
NNNN	70D7	004C
NONCP	00C8	00C0
NOTRD	009C	00AD
PUCH	00F6	00D1
PUCOZ	00D4	00FC
PUNCH	00F4	00D7
PUREZ	00BC	00BA,00C6,00F0,00FA
PUTAB	0074	00BE,00CD,00E0,00E4,00F4,00F8
QQQQ	000D	00A3
READA	00F2	00B8
READZ	00B8	00FB
REED	00F8	00C4
RETAB	0038	00BF,00D4,00F2
RETUR	0037	005C,00FE
RQSA	00C4	00BC,00F0
SAVE2	00A1	00A6,00B0,00B8,00C7,00D8
SENBI	00E8	00A8,00A9,00AC
SOS	00C6	00D3
STACK	00F0	00B9,00D0,0002
STOL	00CA	00CC
TABPU	00FA	00B6
TTTT	7032	0050
WWWW	0813	009C

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

TABLE OF CONTENTS

1. PURPOSE

THE PURPOSE OF THE AUX 1443 EXERCISER PROGRAMS IS TO CHECK CHARACTER SELECTION AND RIPPLE REGISTRATION OF 1443 PRINTERS. THERE ARE SIX TEST PROGRAMS-

A. RIPPLE TEST FOR 13-CHARACTER PRINTERS.
B. RIPPLE TEST FOR 39-CHARACTER PRINTERS.
C. RIPPLE TEST FOR 52-CHARACTER PRINTERS.
D. RIPPLE TEST FOR 63-CHARACTER PRINTERS.
E. FLOATING-0 TEST FOR 13-CHARACTER PRINTERS.
F. FLOATING-0 TEST FOR 39-, 52-, AND 63-CHARACTER PRINTERS.

EACH TEST PROGRAM IS CONTAINED IN ONE SEVEN-CARD DECK. EXCEPT FOR PRINTOUTS, THE SIX TESTS ARE IDENTICAL. ALL OTHER DATA PRESENTED IN THIS PUBLICATION ARE COMMON TO ALL SIX TESTS.

2. PREREQUISITES

2.1 DEVICE AREA CODE

IF THE DEVICE TO BE TESTED USES A CUSTOMER ASSIGNED AREA CODE, A NEW AUX PROGRAM DECK OR PAPER TAPE MUST BE CREATED. THE PROCEDURE IS PRESENTED IN THE DOCUMENTATION OF THE AUX PROGRAM GENERATOR UTILITY (PID 08AC - CARD VERSION, PID 08AD - PAPER TAPE VERSION) THE PROGRAM LOCATIONS THAT MUST BE ALTERED ARE SPECIFIED BY A STATEMENT AT THE BEGINNING OF THE PROGRAM LISTING.

2.2 CARD INPUT

—CAUTION—

DO NOT ATTEMPT TO LOAD THIS PROGRAM IF THE CARD READER SHARES A CHANNEL WITH ANOTHER DEVICE WHILE THAT DEVICE IS OPERATING.

SEPARATE CARD DECKS

THE CARD DECK SUPPLIED WITH THIS DOCUMENT CONTAINS SIX OBJECT DECKS. EACH OBJECT DECK CONTAINS SEVEN CARDS AND IS FOLLOWED BY A BLANK CARD. UPON RECEIPT, SEPARATE AND IDENTIFY THE DECKS AS FOLLOWS-

A. STARTING AT THE FRONT OF THE CARD DECK REMOVE THE FIRST EIGHT CARDS FROM THE CARD DECK, PLACE A RUBBER BAND AROUND THE EIGHT CARDS, AND IDENTIFY THE EIGHT-CARDS. 13-CHARACTER RIPPLE TEST.

B. SEPARATE AND IDENTIFY THE REMAINING FIVE DECKS. THE NAMES OF THE REMAINING DECKS ACCORDING TO THEIR ORDER IN THE CARD DECK ARE AS FOLLOWS-

   1. 39-CHARACTER RIPPLE TEST.
   2. 52-CHARACTER RIPPLE TEST.
   3. 63-CHARACTER RIPPLE TEST.
   4. 13-CHARACTER FLOATING-0 TEST.
   5. 39-, 52-, AND 63-CHARACTER FLOATING-0 TEST.

THE AUX DIAGNOSTIC LOADER (PID 08A1) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PROGRAM DECK CAN BE LOADED.

2.3 PAPER TAPE INPUT

THE AUX DIAGNOSTIC LOADER (PAPER TAPE - PID 08A0) MUST BE PRESENT IN AUX STORAGE BEFORE AN AUX PAPER TAPE PROGRAM CAN BE LOADED.

3. USE PROCEDURES

--CAUTION--

DO NOT RUN THIS PROGRAM IF THE 1443 SHARES A CHANNEL WITH ANOTHER DEVICE WHILE THAT DEVICE IS OPERATING.

BEFORE PROCEEDING, A PROGRAM MUST BE IN MAIN-CORE STORAGE RUNNING OR AT A WAIT INSTRUCTION READY TO START RUNNING.

3.1 CARD INPUT LOADING PROCEDURE

A. BE SURE THE 1442 IS AVAILABLE AND ALL CARDS ARE REMOVED.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT TWO TIMES TO ASSURE THE 1442 IS IN CE MODE.
D. PLACE THE SEVEN CARDS OF THE AUX 1443 EXERCISER PROGRAM IN THE HOPPER OF THE 1442 AND FOLLOW WITH A BLANK CARD.

NOTE

EACH PROGRAM CARD HAS A CHARACTER ENTERED INTO COLUMN 80. THIS CHARACTER DEFINES THE CARD'S POSITION IN THE DECK ACCORDING TO THE FOLLOWING SEQUENCE, X(FIRST), THEN 0, 1, 2, 3, 4, AND 5. THE CARDS CANNOT BE READ UNLESS THEY ARE PLACED IN THE HOPPER IN THE CORRECT ORDER.

E. DEPRESS THE 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
F. SELECT DESIRED ROUTINE FROM TABLE 1.

G. DEPRESS CE LEVEL INTERRUPT PUSHBUTTON (ON CF PANEL) TO LOAD THE PROGRAM. (IF THE HOPPER OF THE 1442 DOES NOT GO EMPTY THE CHECK-SUM ROUTINE IN THE AUX DIAGNUSTIC LOADER MOST LIKELY REJECTED THE PROGRAM. CHECK THE CARDS FOR PROPER SEQUENCE AND RETURN TO STEP A AND TRY AGAIN).
H. GO TO SECTION 3.3

3.2 PAPER TAPE INPUT LOADING PROCEDURE

A. BE SURE THAT THE 1054 TAPE READER IS AVAILABLE AND THAT THERE IS NO TAPE IN THE READER.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT PUSHBUTTON TWO TIMES TO ASSURE THAT THE 1054 IS PLACED IN CE MODE.
D. PLACE THE FIRST TAPE CHARACTLR OF THE PROGRAM DIRECTLY ABOVE THE SENSE PINS IN THE 1054 READER. (THE CHECK-SUM ROUTINE OF THE AUX DIAGNOSTIC LOADER WILL REJECT THE PROGRAM IF THE AUX TAPE IS LOADED INCORRECTLY).
E. SELECT DESIRED ROUTINE FROM TABLE 1.
F. DEPRESS CE LEVEL INTERRUPT TO LOAD THE PROGRAM. TAPE ACTION SHOULD START AND CONTINUE UNTIL THE ENTIRE AUX PROGRAM HAS BEEN READ. WHEN THE READER STOPS, THE FIRST TAPE FEED HOLE CHARACTER FOLLOWING THE AUX PRUGRAM DATA SHOULD BE LOCATED DIRECTLY ABOVE THE 1054 SENSE PINS FOR A CORRECTLY STORED PROGRAM. IF THE TAPE DID NOT STOP AT SAID LOCATION, RETURN TO STEP A TO RELOAD PROG.

3.3 TYPICAL PROGRAM UPERATING PROCEDURE

A. THE ROUTINE SELECTED WILL AUTOMATICALLY START AFTER THE PROGRAM HAS BEEN ENTERED INTO AUXILIARY STORAGE. SUBSEQUENT ROUTINES MAY BE SELECTED AT ANY TIME USING THE BIT SWITCH SETTINGS LISTED IN TABLE 1.

TABLE 1. CE PROGRAM SWITCH SETTING

ROUTINE	BIT SWITCHES 8 9 10 11 12 13 14 15	FUNCTION
NORMAL RIPPLE PATTERN	0 0 0 0 0 0 0 0	THIS SWITCH SETTING SELECTS A ROUTINE THAT TRANSFERS ONE LINE OF ALL POSSIBLE CHARACTERS FROM A PRELOADED DATA TABLE TO THE 1443 PRINTER, PRINTS ONE LINE OF ALL POSSIBLE CHARACTERS, AND CYCLES THE DATA TABLE ON CHARACTER TO THE RIGHT. THE RESULT IS A RIPPLE-RIGHT PRINTOUT (PARAGRAPH 4) THAT CONTINUES UNTIL ANOTHER ROUTINE IS SELECTED.
REVERSE RIPPLE PATTERN	0 0 0 0 0 0 0 1	THIS SWITCH SETTING SELECTS A ROUTINE THAT OPERATES SIMILARLY TO THE NORMAL-RIPPLE-PATTERN ROUTINE EXCEPT THE DATA TABLE IS CYCLED TO THE LEFT. THE RESULT IS A RIPPLE-LEFT PRINTOUT (PARAGRAPH 4) THAT CONTINUES UNTIL ANOTHER ROUTINE IS SELECTED.

SELECT CHARACTER TO PRINT	C C C C C C 1 0 . . . . 1 . . . . . 2 . . . . 4 . . 8 . A ZONE B ZONE	THIS SWITCH SETTING SELECTS A ROUTINE WHICH OBTAINS A DESIRED CHARACTER FOR REPETITIVE PRINTING FROM CE PROGRAM SWITCHES 8 THRU 13. THE STANDARD BCD CHARACTER CODE IS USED AND THE CE PROGRAM SWITCHES ARE DEFINED AS SHOWN BELOW. THIS WILL DESTORY ALL OTHER PRINT ROUTINES.
LOCK ON LAST LINE PRINTED	0 0 0 0 0 0 1 1	THIS SWITCH SETTING SELECTS A ROUTINE THAT INHIBITS THE CYCLIC OPERATION OF THE PRELOADED DATA TABLE AND CONTINUOUSLY REPEATES THE LAST LINE THAT WAS PRINTED BEFORE THE ROUTINE WAS SELECTED. THIS ROUTINE CONTINUES UNTIL A NEW ROUTINE IS SELECTED.
CE SERVICE STOP	0 0 0 0 1 1 1 1	THIS SWITCH SETTING CAUSES THE 1443 PROGRAM TO STOP BUT DOES NOT TERMINATE THE TEST PROGRAM. THIS ROUTINE ALLOWS MECHANICAL ADJUSTMENTS TO BE MADE TO THE 1443. TO RESTART THE PRINTER, SELECT A DESIRED TEST ROUTINE AND DEPRESS THE CE LEVEL INTERRUPT PUSHBUTTON.
PROGRAM TERMINATOR	1 1 1 1 1 1 1 1	THIS SWITCH SETTING SELECTS A ROUTINE THAT TERMINATES THE 1443 TEST PROGRAM AND RELEASES THE 1443 TO THE CUSTOMER. (ALL AUX PROGRAMS USE THE SAME TERMINATOR SWITCH SETTING.) BEFORE SELECTING THIS SWITCH OPTION THE READY LAMP ON THE 1443 MUST BE ON TO AVOID THE POSSIBILITY THAT THE CUSTOMERS PROGRAM WILL RECEIVE A FALSE INTERRUPT FROM THE 1443.
** CAUTION **		FOLLOW THE TERMINATING PROCEDURE IN SECTION 3.5.

3.4 CE SERVICE STOP

THIS SWITCH SETTING WILL NOT TERMINATE THE PROGRAM BUT IT WILL CAUSE THE DEVICE TO STOP AND STAY IN CE MODE. IT IS RECOMMENDED TO USE THIS SETTING WHEN ADJUSTING THIS DEVICE. TO START THE ROUTINE, SELECT THE CE PROGRAM SWITCH SETTINGS AND DEPRESS CE INTERRUPT.

3.5 TERMINATING PROCEDURE

TO TERMINATE THE PROGRAM AND RETURN THE DEVICE TO THE CUSTOMER-
A. SET THE CE PROGRAM SWITCHES TO 00001111 -CE SERVICE STOP. (THE ONLY REASON FOR USING THIS SETTING IS TO STOP ANY DEVICE ACTION WHICH MAY CAUSE AN INTERRUPT).
B. MAKE THE 1443 READY IF IT IS NOT ALREADY IN THIS STATUS. (THIS IS TO AVOID THE POSSIBILITY THAT THE CUSTOMER WILL RECEIVE A FALSE INTERRUPT FROM THE 1443).

C. SET THE CE PROGRAM SWITCHES TO 11111111 -TERMINATOR SETTING, AND DEPRESS THE CE INTERRUPT LEVEL PUSHBUTTON ONCE AND ONLY ONCE. (A SECOND DEPRESSION OF THE CE INT. PUSHBUTTON WILL RESULT IN THE AUX DIAGNOSTIC LOADER TRYING TO LOAD A NEW PROGRAM IF THE READER IS READY).

NOTE

TO OFFSET THE POSSIBILITY THAT THE INPUT DEVICE MIGHT BE MALFUNCTIONING THE NEXT TIME THE 1800 SYSTEM NEEDS SERVICING THE FOLLOWING PROGRAM SHOULD BE LOADED INTO AUX CORE AT THE CONCLUSION OF EACH SERVICE CALL -

A. CARD INPUT

LOAD THE AUX 1442 PACKED READ EXERCISE PROGRAM (PID 08AA) AFTER ASSURING THE PROGRAM IS BY PUNCHING CARDS, CE SWITCH SETTING 00080001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING, TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

B. TAPE INPUT

LOAD THE AUX 1054/55 EXERCISE PROGRAM (PID 08A8). AFTER ASSURING THE PROGRAM IS IN BY PUNCHING TAPE, CE SWITCH SETTINGS 00000001, SET IN THE FAREWELL OPTION, CE SWITCH SETTING 00000000 AND LEAVE THE SWITCHES AT THIS SETTING TO ENSURE THE GREATEST PROTECTION TO THE CUSTOMER. DEPRESS CE INTERRUPT.

4. PRINTOUTS

NO PRINTOUTS ARE PROVIDED WITH THIS PROGRAM DESCRIPTION. IF PRINTOUTS ARE NEEDED IS IT SUGGESTED THAT ACTUAL MACHINE COPIES ARE SAVED UPON INITIAL SYSTEM CHECK-OUT. THE CHARACTER PATTERN MAY ALSO BE DETERMINED (QUITE READILY) BY CONSULTING THE PROGRAM LISTING OF THE PARTICULAR 1443 TEST.

5. COMMENTS

A PROGRAM MUST BE IN MAIN-CORE STORAGE AND MUST BE RUNNING OR READY TO START BEFORE A 1443 TEST PROGRAM CAN BE LOADED. ASSUMING THAT THE AUX DIAGNOSTIC LOADER IS IN AUXILIARY STORAGE, THE READER IS READY TO READ, AND A PARTICULAR TEST ROUTINE HAS BEEN SELECTED, DEPRESSING THE CE LEVEL INTERRUPT PUSHBUTTON CAUSES THE TEST PROGRAM TO BE STORED AND STARTED. AFTER STARTING, THE PROGRAM SETS THE 1443 TO THE CE MODE AND SENSES THE CE PROGRAM SWITCHES TO DETERMINE THE ROUTINE THAT HAS BEEN SELECTED. (SEE TABLE 1.) IF A PROGRAM TERMINATOR (11111111) IS SENSED, A TRANSFER ADDRESS IN THE LOADER PROGRAM IS RESTORED TO ITS ORIGINAL CONTENTS. IN ADDITION, THE CE MODE OF THE 1443 PRINTER IS TURNED OFF, THE DEVICE STATUS WORD (DSW) OF THE 1443 IS CLEARED, AND CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM. IF A PROGRAM TERMINATOR IS NOT SENSED, THE PROGRAM SENSES FOR A CE SERVICE STOP ROUTINE. IF CE SERVICE STOP (00001111) IS SELECTED, THE DSW IS CLEARED AND CONTROL IS RETURNED TO THE CUSTOMER'S MAINLINE PROGRAM. IF CE SERVICE STOP WAS NOT SELECTED, THE DSW IS SENSED AND CHECKED TO DETERMINE IF A TRANSFER-COMPLETE INTERRUPT HAS OCCURRED. IF A TRANSFER-COMPLETE INTERRUPT HAS NOT OCCURRED IT INDICATES THAT A PRINT-COMPLETE INTERRUPT HAS OCCURRED. CONTROL IS THEN RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM. WHEN THE TRANSFER-COMPLETE INTERRUPT IS RECEIVED, THE PROGRAM IS SET UP FOR A LATER PRINT-COMPLETE INTERRUPT CHECK, AND THE PROGRAM PROCEEDS TO ONE OF THE ROUTINES DISCUSSED IN PARAGRAPHS 5.1 THROUGH 5.4. UPON ENTERING EACH ROUTINE, CERTAIN CONTROLS ARE INSTITUTED TO CONTROL A DATA TABLE THAT IS AUTOMATICALLY SET UP WHEN THE PROGRAM IS LOADED. THESE CONTROLS ARE UNIQUE TO EACH ROUTINE. AFTER EACH ROUTINE IS COMPLETED, THE PROGRAM DETERMINES WHETHER A PRINT-COMPLETE INTERRUPT OCCURRED. IF THE INTERRUPT HAS NOT OCCURRED, CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM. IF THE INTERRUPT HAS OCCURRED, AN INITIALIZE-WRITE COMMAND IS ISSUED AND CONTROL IS RETURNED TO THE CUSTOMER'S MAIN-LINE PROGRAM.

5.1 NORMAL-RIPPLE-PATTERN ROUTINE

THE NORMAL-RIPPLE-PATTERN ROUTINE TRANSFERS ONE LINE OF ALL POSSIBLE CHARACTERS FROM A PRELOADED DATA TABLE TO THE 1443 PRINTER, PRINTS ONE LINE OF ALL POSSIBLE CHARACTERS, AND CYCLES THE DATA TABLE ONE CHARACTER TO THE RIGHT. THE RESULT IS A RIPPLE-RIGHT PRINTOUT THAT CONTINUES UNTIL ANOTHER ROUTINE IS SELECTED.

5.2 REVERSE-RIPPLE-PATTERN ROUTINE

THE REVERSE-RIPPLE-PATTERN ROUTINE OPERATES SIMILARLY TO THE NORMAL-RIPPLE-PATTERN ROUTINE (PARAGRAPH 5.1) EXCEPT THE DATA TABLE IS CYCLED TO THE LEFT. THE RESULT IS A RIPPLE-LEFT PRINTOUT THAT CONTINUES UNTIL ANOTHER ROUTINE IS SELECTED.

5.3 SELECT-CHARACTER-TO-PRINT ROUTINE

THE SELECT-CHARACTER-TO-PRINT ROUTINE SENSES THE SETTINGS OF THE FIRST SIX CE PROGRAM SWITCHES TO DETERMINE THE CHARACTER THAT HAS BEEN SELECTED FOR PRINTING. THE SELECTED CHARACTER IS THEN LOADED INTO ALL LOCATIONS OF THE PRELOADED DATA TABLE (PARAGRAPH 5.1), AND THE DATA IS SUBSEQUENTLY TRANSFERRED TO THE 1443 PRINTER. AFTER TRANSFER, ONE LINE OF THE SELECTED CHARACTER IS PRINTED EACH PRINTING CYCLE. PRINTING CONTINUES UNTIL A CE SERVICE STOP OR ANOTHER ROUTINE IS SELECTED. THE PRELOADED DATA TABLE IS DESTROYED BY THE SELECT-CHARACTER-TO-PRINT ROUTINE.

5.4 LOCK-ON-LAST-LINE-PRINTED ROUTINE

THE LOCK-ON-LAST-LINE-PRINTED ROUTINE INHIBITS THE CYCLIC OPERATION OF THE PRELOADED DATA AND CONTINUOUSLY REPEATS THE LAST LINE THAT WAS PRINTED BEFORE THE ROUTINE WAS SELECTED. PRINTING CONTINUES UNTIL A NEW ROUTINE IS SELECTED.

6. APPENDIX

```
*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0
-*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.
 -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*
  -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -
   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321
1   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321
21   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321
321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321
4321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.098765432
54321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.09876543
654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654
7654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.098765
87654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.09876
987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987
0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.098
.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.09
*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0
-*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.
 -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*
  -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -
   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321
1   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321
21   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321
321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321
4321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.098765432
54321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.09876543
654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654321   -*.0987654
```

FIGURE 1

13 CHARACTER BAR RIPPLE TEST

```
0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   AB
$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   A
,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789
.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789
Z.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789
YZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789
XYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$012345678
WXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$01234567
VWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456
UVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$012345
TUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$01234
STUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123
RSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$012
QRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$01
PQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0
OPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$
NOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,
MNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.
LMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ.,$0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ
```

FIGURE 2

39 CHARACTER BAR RIPPLE TEST

```
0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ
+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ
=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ
M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXY
□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWX
'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVW
)'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUV
()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTU
@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRST
%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRS
/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQR
&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQ
.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOP
$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNO
*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMN
-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLM
,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKL
 ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJK
  ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJ
   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHIJKLMNOPQRSTUVWXYZ   ,-*$.&/%@()'□M=+0123456789   ABCDEFGHI
```

FIGURE 3

52 CHARACTER BAR RIPPLE TEST

NOT AVAILABLE AT THIS TIME

FIGURE 4

63 CHARACTER BAR RIPPLE TEST

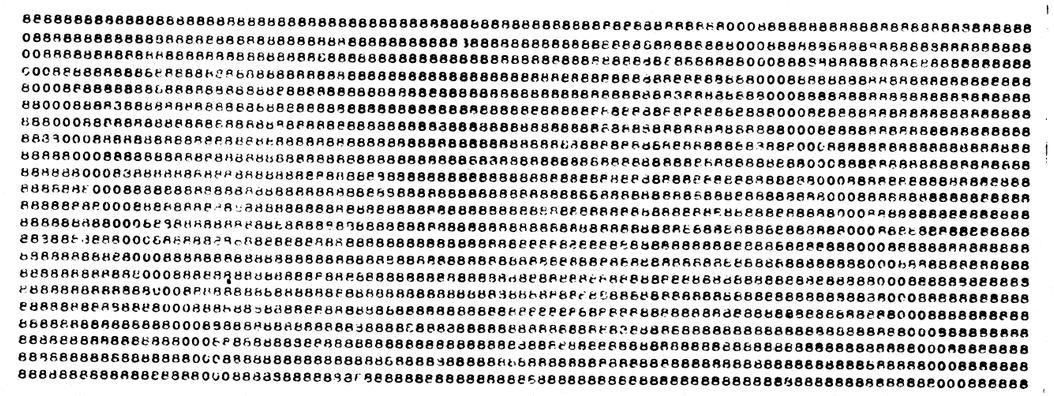

FIGURE 5

13 CHARACTER BAR FLOATING ZERO TEST

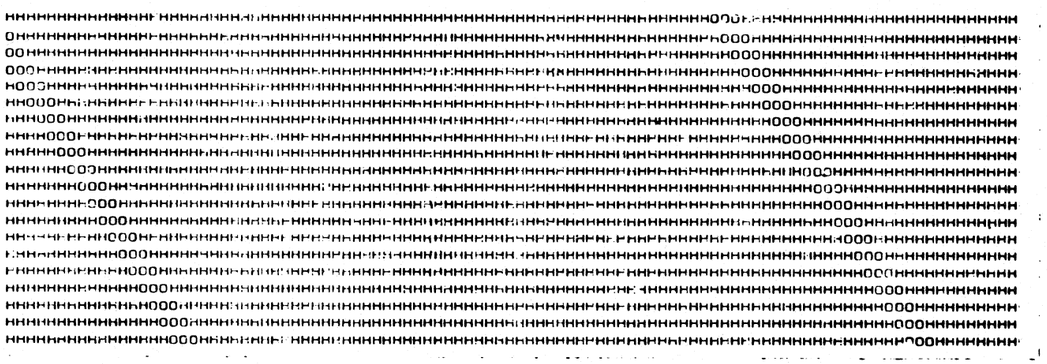

FIGURE 6

39, 52, AND 63 CHARACTER BAR FLOATING ZERO TEST

AUX 1443 EXERCISER
13 CHAR BAR RIPPLE EXERCISER

```
                    ABS
02BC                ORG     /36                                          8AB00C00
                  ************************************************       8AB00010
                  *                                                      8AB00020
                  *                                                      8AB00030
                  *       IF THIS PROG IS TO BE USED FOR A MACHINE       8AB00040
                  * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH       8AB00050
                  * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST     8AB00060
                  * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A       8AB00070
                  * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG       8AB00080
                  * GENERATOR WRITE-UP FOR PROCEDURE.                    8AB00090
                  *                                                      8AB00100
                  ************************************************       8AB00110
                  *                                                      8AB00120
                  *                                                      8AB00130
                  *            1443 RIPPLE PROGRAM                       8AB00140
                  *            * WITH 13 CHAR SET                        8AB00150
                  *            * AND 120 OR 144                          8AB00160
                  *            * PRINT POSITIONS                         8AB00170
                  *            ******************                        8AB00180
                  *                                                      8AB00190
                  * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE     8AB00200
                  *                                                      8AB00210
                  *                                                      8AB00220
                  *            CE SWITCH SETTINGS                        8AB00230
                  *                                                      8AB00240
                  *            XXXXXX00  NORMAL RIPPLE PATTERN           8AB00250
                  *            XXXXXX01  REVERSE RIPPLE PATTERN          8AB00260
                  *            XXXXXX11  LOCK ON LAST LINE PRINTED       8AB00270
                  *            0000 1111   CE SERVICE STOP               8AB00280
                  *            11111111  TERMINATE RUN                   8AB00290
                  *            CCCCCC10   SELECT CHARACTER TO BE         8AB00300
                  *            $*$*$*      PRINTED. THE DESIRED CHAR     8AB00310
                  *            $*$*$*      IS SELECTED BY MEANS OF       8AB00320
                  *            $*$*$*      THE STANDARD BCD CH CODE      8AB00330
                  *            $*$*$*      AS SHOWN BELOW                8AB00340
                  *            $*$*$*                                    8AB00350
                  *            $*$*$******* 1                            8AB00360
                  *            $*$*$$$$$$ 2                              8AB00370
                  *            $*$******** 4                             8AB00380
                  *            $*$$$$$$$$$ 8                             8AB00390
                  *            $********** A ZONE                        8AB00400
                  *            $$$$$$$$$$ B ZONE                         8AB00410
                  *                                                      8AB00420
                  *                                                      8AB00430
                  *            EXPLANETARY NOTES                         8AB00440
                  *               THE X CHAR MEANS DOES NOT MATTER       8AB00450
                  *               * UNLESS THE OPERATION CODE            8AB00460
                  *               * BECOMES A TERM OR CE SERV STOP       8AB00470
                  *                                                      8AB00480
                  *            NOTE  PRINTING OF A SPECIFIC CHAR         8AB00490
                  *                  * DESTROYS RIPPLE PATTERN           8AB00500
                  *                                                      8AB00510
                  *                                                      8AB00520
                  *                                                      8AB00530
                  * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION     8AB00540
                  * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.           8AB00550
                  ************************************************       8AB00560
                  *                                                      8AB00570
                  *            AUX PROG ENTRY POINTS                     8AB00580
                  *            *********************                     8AB00590
                  *                                                      8AB00600
                  *            1ST PASS ENTRY                            8AB00610
                  *                                                      8AB00620
                  * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN    8AB00630
                  * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER         8AB00640
                  *                                                      8AB00650
0036 0  1000        NOP             NO OPERATION                         8AB00660
0037 0  1000        NOP             NO OPERATION                         8AB00670
```


AUX 1443 EXERCISER
13 CHAR BAR RIPPLE EXERCISER

```
0038 0  1000        NOP             NO OPERATION                         8AB00680
0039 0  1000        NOP             NO OPERATION                         8AB00690
003A 0  1000        NOP             NO OPERATION                         8AB00700
003B 0  1000        NOP             NO OPERATION                         8AB00710
003C 0  C025        LD      NN      RESTORE LOC NICE                     8AB00720
003D 0  D0F7        STO     /35     * IN AUX LOADER                      8AB00730
                  *                                                      8AB00740
003E 0  C01D        LD      DSW     PLACE BRANCH                         8AB00750
003F 0  D0C4        STO     /04     * TO RETUR LABEL                     8AB00760
                  ************************************************       8AB00770
                  *                                                      8AB00780
                  *            ADD AREA CODE TO THE I/O COMMANDS         8AB00790
                  *                                                      8AB00800
0040 0  6107        LDX   1 7                                            8AB00810
0041 0  C158  BUILD LD    1 CEOFF     GET IOCC WORD AND                  8AB00820
0042 0  E820        OR      AREA      * OR IN AREA AND                   8AB00830
0043 0  D158        STO   1 CEOFF     * PLACE BACK                       8AB00840
0044 0  71FE        MDX   1 -2                                           8AB00850
0045 0  70FB        MDX     BUILD                                        8AB00860
                  *                                                      8AB00870
                  *            ALL BUT 1ST PASS ENTRY POINT              8AB00880
                  *                                                      8AB00890
0046 0  0813  RETUR XIO     CEON                                         8AB00900
0047 0  080E        XIO     SENBI       SENSE CE SW TO ACCUM             8AB00910
0048 0  E00D        AND     SENBI       BLOCK OUT PROG SEL SW            8AB00920
0049 0  D010        STO     CEON                                         8AB00930
004A 0  F00B        EOR     SENBI                                        8AB00940
004B 00 4C180064    BSC   L NOTRD,+-    BR OUT OF PROGRAM                8AB00950
                  *                                                      8AB00960
004D 0  C00C        LD      CEON                                         8AB00970
004E 0  F009        EOR     CEOFF                                        8AB00980
004F 00 4C180068    BSC   L GSTR,+-     BR CE SERVICE STOP               8AB00990
                  *                                                      8AB01000
0051 0  080A        XIO     DSW         SENSE DEVICE STATUS              8AB01010
0052 00 4C28006A    BSC   L TXFRC,+Z    BR TRANSFER COMP INT             8AB01020
                  ************************************************       8AB01030
                  *                                                      8AB01040
                  *            PRINT INT ROUTINE                         8AB01050
                  *            *****************                         8AB01060
                  *                                                      8AB01070
0054 0  0809  PRCOM XIO     INI52       1443 INIT WRITE OP               8AB01080
0055 0  7013        MDX     SAVE2                                        8AB01090
                  ************************************************       8AB01100
                  *                                                      8AB01110
                  *            CONSTANTS AND/OR IOCC WORDS               8AB01120
                  *                                                      8AB01130
0056    0000        BSS   E 0                                            8AB01140
0056 0  00FF  SENBI DC      /00FF       END COMMAND COMPARE              8AB01150
0057 0  0760        DC      /0760       SENSE CE SWITCHES                8AB01160
0058 0  000F  CEOFF DC      /000F                                        8AB01170
0059 0  0000        DC      /0000       CE OFF WORD                      8AB01180
005A 0  0000  CEON  DC      /0000       CHAR WORK LOC                    8AB01190
005B 0  0001        DC      /0001       CE ON WORD                       8AB01200
005C 0  7041  DSW   DC      TTTT                                         8AB01210
005D 0  0701        DC      /0701       DSW WORD                         8AB01220
005E 0  00A9  INI52 DC      TBL52                                        8AB01230
005F 0  0500        DC      /0500       INIT WRITE                       8AB01240
0060 0  0000  SER   DC      0                                            8AB01250
0061 0  0000  SAVV  DC      0                                            8AB01260
0062 0  70D7  NN    DC      NNNN                                         8AB01270
0063 0  3000  AREA  DC      /3000       1ST 1443 AREA CODE               8AB01280
                  *                     * CHANGE THIS VALUE FOR A        8AB01290
                  *                     * DEVICE ON ANOTHER AREA         8AB01300
                  ************************************************       8AB01310
                  *                                                      8AB01320
                  *            EXIT POINTS TO AUX LOADER                 8AB01330
                  *            *************************                 8AB01340
                  *                                                      8AB01350
```

```
                        *               TERMINATE EXIT POINT                    8AB01360
                        *                                                       8AB01370
0064 00 65000813        NOTRD LDX   L1 WWWW                                     8AB01380
0066 0  699D                  STX    1 /04                                      8AB01390
0067 0  08F0                  XIO     CEOFF                                     8AB01400
                        *                                                       8AB01410
                        *               CE SERVICE EXIT POINT                   8AB01420
                        *                                                       8AB01430
0068 0  08F3            GSTR  XIO       DSW                                     8AB01440
                        *                                                       8AB01450
                        *               NORMAL EXIT POINT                       8AB01460
                        *                                                       8AB01470
0069 0  70A3            SAVE2 MDX       QQQQ        EXIT TO AUX LOADER          8AB01480
                        ************************************************        8AB01490
                        *                                                       8AB01500
                        *               TRANSFER COMP INT                       8AB01510
                        *               *****************                       8AB01520
                        *                                                       8AB01530
006A 0  188D            TXFRC SRT       13          TEST FOR PRINT              8AB01540
006B 0  D0F4                  STO       SER         * INTERRUPT LATER           8AB01550
006C 0  C0ED                  LD        CEON                                    8AB01560
006D 0  1882                  SRT       2                                       8AB01570
006E 0  D0EB                  STO       CEON                                    8AB01580
006F 0  1010                  SLA       16                                      8AB01590
0070 0  1082                  SLT       2                                       8AB01600
0071 0  D001                  STO       A+1                                     8AB01610
0072 00 65000000        A     LDX   L1  0                                       8AB01620
0074 00 4D800076              BSC   I1  GOT.        BR TO SW OPTION             8AB01630
                        *                                                       8AB01640
0076 0  0098            GOTA  DC        CAME        NORMAL RIPPLE               8AB01650
0077 0  0086                  DC        REVER       REVERSE RIPPLE PATTN        8AB01660
0078 0  007A                  DC        REBIT       READ BIT SWITCHES           8AB01670
0079 0  0082                  DC        GONE        LOCK ON LAST LINE PR        8AB01680
                        ************************************************        8AB01690
                        *                                                       8AB01700
                        *               PRINT SW CHARACTER                      8AB01710
                        *                                                       8AB01720
007A 0  C0DF            REBIT LD        CEON                                    8AB01730
007B 0  1008                  SLA       8                                       8AB01740
007C 0  E8DD                  OR        CEON                                    8AB01750
007D 0  61B8                  LDX    1  -72                                     8AB01760
007E 00 D50000F2        RPT   STO   L1  TBL52+73                                8AB01770
0080 0  7101                  MDX    1  1                                       8AB01780
0081 0  70FC                  MDX        RPT                                     8AB01790
                        ************************************************        8AB01800
                        *                                                       8AB01810
                        *               LOCK ON ROUTINE                         8AB01820
                        *                                                       8AB01830
0082 0  C0DD            GONE  LD        SER                                     8AB01840
0083 00 4C040054              BSC   L   PRCOM,E     BR PRINT COMP INT           8AB01850
0085 0  70E3                  MDX       SAVE2                                   8AB01860
                        ************************************************        8AB01870
                        *                                                       8AB01880
                        *               REVERSE ROUTINE                         8AB01890
                        *                                                       8AB01900
0086 0  61B9            REVER LDX    1  -71                                     8AB01910
0087 00 C50000F1              LD    L1  TBL52+72                                8AB01920
0089 0  D0D7                  STO       SAVV                                    8AB01930
008A 0  1890                  SRT       16                                      8AB01940
008B 00 C50000F2        LOOP  LD    L1  TBL52+73                                8AB01950
008D 0  18C8                  RTE       8                                       8AB01960
008E 00 D50000F1              STO   L1  TBL52+72                                8AB01970
0090 0  1888                  SRT       8                                       8AB01980
0091 0  7101                  MDX    1  1                                       8AB01990
0092 0  70F8                  MDX       LOOP                                    8AB02000
0093 0  C0CD                  LD        SAVV                                    8AB02010
0094 0  18C8                  RTE       8                                       8AB02020
0095 00 D40000F1              STO   L   TBL52+72                                8AB02030
```



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0097 0  70EA                    MDX     GONE                                    8AB02040
                        ************************************************        8AB02050
                        *                                                       8AB02060
                        *               FORWARD ROUTINE                         8AB02070
                        *                                                       8AB02080
0098 0  6147            CAME  LDX    1  71                                      8AB02090
0099 00 C50000AA              LD    L1  TBL52+1                                 8AB02100
009B 0  D0C5                  STO       SAVV                                    8AB02110
009C 0  1890                  SRT       16                                      8AB02120
009D 00 C5000CA9        SOOP  LD    L1  TBL52                                   8AB02130
009F 0  18D8                  RTE       24                                      8AB02140
00A0 00 D50000AA              STO   L1  TBL52+1                                 8AB02150
00A2 0  1088                  SLT       8                                       8AB02160
00A3 0  71FF                  MDX    1  -1                                      8AB02170
00A4 0  70F8                  MDX       SOOP                                    8AB02180
00A5 0  C088                  LD        SAVV                                    8AB02190
00A6 0  1088                  SLT       8                                       8AB02200
00A7 0  D002                  STO       TBL52+1                                 8AB02210
00A8 0  70D9                  MDX       GONE                                    8AB02220
                        ************************************************        8AB02230
00A9 0  0048            TBL52 DC        72                                      8AB02240
00AA 0  202C                  DC        /202C       -, *                        8AB02250
00AB 0  380A                  DC        /380A       ., 0                        8AB02260
00AC 0  0908                  DC        /0908       9, 8                        8AB02270
00AD 0  0706                  DC        /0706       7, 6                        8AB02280
00AE 0  0504                  DC        /0504       5, 4                        8AB02290
00AF 0  0302                  DC        /0302       3, 2                        8AB02300
00B0 0  0100                  DC        /0100       1, BLANK                    8AB02310
00B1 0  0000                  DC        /0000       BLANK, BLANK                8AB02320
00B2 0  202C                  DC        /202C       -, *                        8AB02330
00B3 0  380A                  DC        /380A       ., 0                        8AB02340
00B4 0  0908                  DC        /0908       9, 8                        8AB02350
00B5 0  0706                  DC        /0706       7, 6                        8AB02360
00B6 0  0504                  DC        /0504       5, 4                        8AB02370
00B7 0  0302                  DC        /0302       3, 2                        8AB02380
00B8 0  0100                  DC        /0100       1, BLANK                    8AB02390
00B9 0  0000                  DC        /0000       BLANK, BLANK                8AB02400
00BA 0  202C                  DC        /202C       -, *                        8AB02410
00BB 0  380A                  DC        /380A       ., 0                        8AB02420
00BC 0  0908                  DC        /0908       9, 8                        8AB02430
00BD 0  0706                  DC        /0706       7, 6                        8AB02440
00BE 0  0504                  DC        /0504       5, 4                        8AB02450
00BF 0  0302                  DC        /0302       3, 2                        8AB02460
00C0 0  0100                  DC        /0100       1, BLANK                    8AB02470
00C1 0  0000                  DC        /0000       BLANK, BLANK                8AB02480
00C2 0  202C                  DC        /202C       -, *                        8AB02490
00C3 0  380A                  DC        /380A       ., 0                        8AB02500
00C4 0  0908                  DC        /0908       9, 8                        8AB02510
00C5 0  0706                  DC        /0706       7, 6                        8AB02520
00C6 0  0504                  DC        /0504       5, 4                        8AB02530
00C7 0  0302                  DC        /0302       3, 2                        8AB02540
00C8 0  0100                  DC        /0100       1, BLANK                    8AB02550
00C9 0  0000                  DC        /0000       BLANK, BLANK                8AB02560
00CA 0  202C                  DC        /202C       -, *                        8AB02570
00CB 0  380A                  DC        /380A       ., 0                        8AB02580
00CC 0  0908                  DC        /0908       9, 8                        8AB02590
00CD 0  0706                  DC        /0706       7, 6                        8AB02600
00CE 0  0504                  DC        /0504       5, 4                        8AB02610
00CF 0  0302                  DC        /0302       3, 2                        8AB02620
00D0 0  0100                  DC        /0100       1, BLANK                    8AB02630
00D1 0  0000                  DC        /0000       BLANK, BLANK                8AB02640
00D2 0  202C                  DC        /202C       -, *                        8AB02650
00D3 0  380A                  DC        /380A       ., 0                        8AB02660
00D4 0  0908                  DC        /0908       9, 8                        8AB02670
00D5 0  0706                  DC        /0706       7, 6                        8AB02680
00D6 0  0504                  DC        /0504       5, 4                        8AB02690
00D7 0  0302                  DC        /0302       3. 2                        8AB02700
00D8 0  0100                  DC        /0100       1, BLANK                    8AB02710
```

AUX 1443 EXERCISER
13 CHAR BAR RIPPLE EXERCISER

```
00D9 0 0000              DC      /0000     BLANK, BLANK              8AB02720
00DA 0 202C              DC      /202C     -, *                      8AB02730
00DB 0 380A              DC      /380A     ., 0                      8AB02740
00DC 0 0908              DC      /0908     9, 8                      8AB02750
00DD 0 0706              DC      /0706     7, 6                      8AB02760
00DE 0 0504              DC      /0504     5, 4                      8AB02770
00DF 0 0302              DC      /0302     3, 2                      8AB02780
00E0 0 0100              DC      /0100     1, BLANK                  8AB02790
00E1 0 0000              DC      /0000     BLANK, BLANK              8AB02800
00E2 0 202C              DC      /202C     -, *                      8AB02810
00E3 0 380A              DC      /380A     ., 0                      8AB02820
00E4 0 0908              DC      /0908     9, 8                      8AB02830
00E5 0 0706              DC      /0706     7, 6                      8AB02840
00E6 0 0504              DC      /0504     5, 4                      8AB02850
00E7 0 0302              DC      /0302     3, 2                      8AB02860
00E8 0 0100              DC      /0100     1, BLANK                  8AB02870
00E9 0 0000              DC      /0000     BLANK, BLANK              8AB02880
00EA 0 202C              DC      /202C     -, *                      8AB02890
00EB 0 380A              DC      /380A     ., 0                      8AB02900
00EC 0 0908              DC      /0908     9, 8                      8AB02910
00ED 0 0706              DC      /0706     7, 6                      8AB02920
00EE 0 0504              DC      /0504     5, 4                      8AB02930
00EF 0 0302              DC      /0302     3, 2                      8AB02940
00F0 0 0100              DC      /0100     1, BLANK                  8AB02950
00F1 0 0000              DC      /0000     BLANK, BLANK              8AB02960
                         *                                           8AB02970
000D                     QQQQ    EQU     /D          GO TO LOADER AT /D 8AB02980
70D7                     NNNN    EQU     /70D7       FOR CARD LOADER AT /35 8AB02990
0813                     WWWW    EQU     /0813       SET IN LOADER AT /04 8AB03000
7041                     TTTT    EQU     /7000+RETUR-/4-1   THIS IS EQUAL TO 8AB03010
                         *                           THE BRANCH FROM THE LOADER 8AB03020
                         *                           TO RETUR IN THIS PROGRAM. 8AB03030
                         ********************************************** 8AB03040
00F2     00F1                    END     *-1         END CARD NEVER USED 8AB03050
```


AUX 1443 EXERCISER
13 CHAR BAR RIPPLE EXERCISER

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
A	0072	0071
AREA	0063	0042
BUILD	0041	0045
CAME	0098	0076
CEOFF	0058	0041,0043,004E,0067
CEON	005A	0046,0049,004D,006C,006E,007A,007C
CSW	005C	003E,0051,0068
GONE	0082	0079,0097,00A8
GOTA	0076	0074
GSTR	0068	004F
IN152	005E	0054
LOOP	008B	0092
NN	0062	003C
NNNN	70D7	0062
NOTRD	0064	0048
PRCOM	0054	0083
QQQQ	000D	0069
REBIT	007A	0078
RETUR	0046	00F2
REVER	0086	0077
RPT	007E	0081
SAVE2	0069	0055,0085
SAVV	0061	0089,0093,009B,00A5
SENBI	0056	0047,0048,004A
SER	0060	006B,0082
SOOP	009D	00A4
TBL52	00A9	005E,007E,0087,008B,008E,0095,0099,009D,00A0,00A7
TTTT	7041	005C
TXFRC	006A	0052
WWWW	0813	0064

```
                    ABS                                                 8AB03060
02BC                ORG     /36                                         8AB03070
                ************************************************        8AB03080
                *                                                       8AB03090
                *       IF THIS PROG IS TO BE USED FOR A MACHINE        8AB03100
                * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH        8AB03110
                * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST      8AB03120
                * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A        8AB03130
                * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG        8AB03140
                * GENERATOR WRITE-UP FOR PROCEDURE.                    8AB03150
                *                                                       8AB03160
                ************************************************        8AB03170
                *                                                       8AB03180
                *                                                       8AB03190
                *           1443 RIPPLE PROGRAM                         8AB03200
                *           * WITH 39 CHAR SET                          8AB03210
                *           * AND 120 OR 144                            8AB03220
                *           * PRINT POSITIONS                           8AB03230
                *           *****************                           8AB03240
                *                                                       8AB03250
                * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE      8AB03260
                *                                                       8AB03270
                *                                                       8AB03280
                *           CE SWITCH SETTINGS                          8AB03290
                *                                                       8AB03300
                *           XXXXXX00  NORMAL RIPPLE PATTERN             8AB03310
                *           XXXXXX01  REVERSE RIPPLE PATTERN            8AB03320
                *           XXXXXX11  LOCK ON LAST LINE PRINTED         8AB03330
                *           00001111   CE SERVICE STOP                  8AB03340
                *           11111111  TERMINATE RUN                     8AB03350
                *           CCCCCC10   SELECT CHARACTER TO BE           8AB03360
                *           $*$*$*     PRINTED. THE DESIRED CHAR        8AB03370
                *           $*$*$*     IS SELECTED BY MEANS OF          8AB03380
                *           $*$*$*     THE STANDARD BCD CH CODE         8AB03390
                *           $*$*$*     AS SHOWN BELOW                   8AB03400
                *           $*$*$*                                      8AB03410
                *           $*$*******  1                               8AB03420
                *           $*$*******  2                               8AB03430
                *           $*$*******  4                               8AB03440
                *           $*$*******  8                               8AB03450
                *           $*$*******  A ZONE                         8AB03460
                *           $*$*******  B ZONE                         8AB03470
                *                                                       8AB03480
                *                                                       8AB03490
                *           EXPLANETARY NOTES                           8AB03500
                *              THE X CHAR MEANS DOES NOT MATTER         8AB03510
                *              * UNLESS THE OPERATION CODE              8AB03520
                *              * BECOMES A TERM OR CE SERV STOP         8AB03530
                *                                                       8AB03540
                *           NOTE  PRINTING OF A SPECIFIC CHAR           8AB03550
                *                 * DESTROYS RIPPLE PATTERN             8AB03560
                *                                                       8AB03570
                *                                                       8AB03580
                *                                                       8AB03590
                * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION      8AB03600
                * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.            8AB03610
                ************************************************        8AB03620
                *                                                       8AB03630
                *           AUX PROG ENTRY POINTS                       8AB03640
                *           *********************                       8AB03650
                *                                                       8AB03660
                *           1ST PASS ENTRY                              8AB03670
                *                                                       8AB03680
                * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN     8AB03690
                * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER          8AB03700
                *                                                       8AB03710
0036 0  1000        NOP             NO OPERATION                        8AB03720
0037 0  1000        NOP             NO OPERATION                        8AB03730
```



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0038 0  1000        NOP             NO OPERATION                        8AB03740
0039 0  1000        NOP             NO OPERATION                        8AB03750
003A 0  1000        NOP             NO OPERATION                        8AB03760
003B 0  1000        NOP             NO OPERATION                        8AB03770
003C 0  C025        LD      NN      RESTORE LOC NICE                    8AB03780
003D 0  D0F7        STO     /35     * IN AUX LOADER                     8AB03790
                *                                                       8AB03800
003E 0  C01D        LD      DSW     PLACE BRANCH                        8AB03810
003F 0  D0C4        STO     /04     * TO RETUR LABEL                    8AB03820
                ************************************************        8AB03830
                *                                                       8AB03840
                *           ADD AREA CODE TO THE I/O COMMANDS           8AB03850
                *                                                       8AB03860
0040 0  6107        LDX   1 7                                           8AB03870
0041 0  C158    BUILD LD    1 CEOFF     GET IOCC WORD AND               8AB03880
0042 0  E820        OR      AREA        * OR IN AREA AND                8AB03890
0043 0  D158        STO   1 CEOFF       * PLACE BACK                    8AB03900
0044 0  71FE        MDX   1 -2                                          8AB03910
0045 0  70FB        MDX     BUILD                                       8AB03920
                *                                                       8AB03930
                *           ALL BUT 1ST PASS ENTRY POINT                8AB03940
                *                                                       8AB03950
0046 0  0813    RETUR XIO     CEON                                      8AB03960
0047 0  080E        XIO     SENBI       SENSE CE SW TO ACCUM            8AB03970
0048 0  E00D        AND     SENBI       BLOCK OUT PROG SEL SW           8AB03980
0049 0  D010        STO     CEON                                        8AB03990
004A 0  F00B        EOR     SENBI                                       8AB04000
004B 00 4C180064    BSC   L NOTRD,+-    BR OUT OF PROGRAM               8AB04010
                *                                                       8AB04020
004D 0  C00C        LD      CEON                                        8AB04030
004E 0  F009        EOR     CEOFF                                       8AB04040
004F 00 4C180068    BSC   L GSTR,+-     BR CE SERVICE STOP              8AB04050
                *                                                       8AB04060
0051 0  080A        XIO     DSW         SENSE DEVICE STATUS             8AB04070
0052 00 4C28006A    BSC   L TXFRC,+Z    BR TRANSFER COMP INT            8AB04080
                ************************************************        8AB04090
                *                                                       8AB04100
                *           PRINT INT ROUTINE                           8AB04110
                *           *****************                           8AB04120
                *                                                       8AB04130
0054 0  0809    PRCOM XIO     INI52       1443 INIT WRITE OP            8AB04140
0055 0  7013        MDX     SAVE2                                       8AB04150
                ************************************************        8AB04160
                *                                                       8AB04170
                *           CONSTANTS AND/OR IOCC WORDS                 8AB04180
                *                                                       8AB04190
0056    0000        BSS   E 0                                           8AB04200
0056 0  00FF    SENBI DC      /00FF       END COMMAND COMPARE           8AB04210
0057 0  0760        DC      /0760       SENSE CE SWITCHES               8AB04220
0058 0  000F    CEOFF DC      /000F                                     8AB04230
0059 0  0000        DC      /0000       CE OFF WORD                     8AB04240
005A 0  0000    CEON  DC      /0000       CHAR WORK LOC                 8AB04250
005B 0  0001        DC      /0001       CE ON WORD                      8AB04260
005C 0  7041    DSW   DC      TTTT                                      8AB04270
005D 0  0701        DC      /0701       DSW WORD                        8AB04280
005E 0  00A9    INI52 DC      TBL52                                     8AB04290
005F 0  0500        DC      /0500       INIT WRITE                      8AB04300
0060 0  0000    SER   DC      0                                         8AB04310
0061 0  0000    SAVV  DC      0                                         8AB04320
0062 0  70D7    NN    DC      NNNN                                      8AB04330
0063 0  3000    AREA  DC      /3000       1ST 1443 AREA CODE            8AB04340
                *                           * CHANGE THIS VALUE FOR A   8AB04350
                *                           * DEVICE ON ANOTHER AREA    8AB04360
                ************************************************        8AB04370
                *                                                       8AB04380
                *           EXIT POINTS TO AUX LOADER                   8AB04390
                *           *************************                   8AB04400
                *                                                       8AB04410
```

```
                        *               TERMINATE EXIT POINT                    8AB04420
                        *                                                       8AB04430
0064 00 65000813        NOTRD LDX  L1 WWWW                                      8AB04440
0066 0  699D                  STX   1 /04                                       8AB04450
0067 0  08F0                  XIO     CEOFF                                     8AB04460
                        *                                                       8AB04470
                        *               CE SERVICE EXIT POINT                   8AB04480
                        *                                                       8AB04490
0068 0  08F3            GSTR  XIO       DSW                                     8AB04500
                        *                                                       8AB04510
                        *               NORMAL EXIT POINT                       8AB04520
                        *                                                       8AB04530
0069 0  70A3            SAVE2 MDX       QQQQ        EXIT TO AUX LOADER          8AB04540
                        ********************************************          8AB04550
                        *                                                       8AB04560
                        *               TRANSFER COMP INT                       8AB04570
                        *               ****************                        8AB04580
                        *                                                       8AB04590
006A 0  188D            TXFRC SRT       13          TEST FOR PRINT              8AB04600
006B 0  D0F4                  STO       SER         * INTERRUPT LATER           8AB04610
006C 0  C0ED                  LD        CEON                                    8AB04620
006D 0  1882                  SRT       2                                       8AB04630
006E 0  D0EB                  STO       CEON                                    8AB04640
006F 0  1010                  SLA       16                                      8AB04650
0070 0  1082                  SLT       2                                       8AB04660
0071 0  D001                  STO       A+1                                     8AB04670
0072 00 65000000        A     LDX  L1   0                                       8AB04680
0074 00 4D800076              BSC  I1   GOTA        BR TO SW OPTION             8AB04690
                        *                                                       8AB04700
0076 0  0098            GOTA  DC        CAME        NORMAL RIPPLE               8AB04710
0077 0  0086                  DC        REVER       REVERSE RIPPLE PATTN        8AB04720
0078 0  007A                  DC        REBIT       READ BIT SWITCHES           8AB04730
0079 0  0082                  DC        GONE        LOCK ON LAST LINE PR        8AB04740
                        ********************************************          8AB04750
                        *                                                       8AB04760
                        *               PRINT SW CHARACTER                      8AB04770
                        *                                                       8AB04780
007A 0  C0DF            REBIT LD        CEON                                    8AB04790
007B 0  1008                  SLA       8                                       8AB04800
007C 0  E8DD                  OR        CEON                                    8AB04810
007D 0  61AC                  LDX   1   -84                                     8AB04820
007E 00 D50000FE        RPT   STO   L1  TBL52+85                                8AB04830
0080 0  7101                  MDX   1   1                                       8AB04840
0081 0  70FC                  MDX       RPT                                     8AB04850
                        ********************************************          8AB04860
                        *                                                       8AB04870
                        *               LOCK ON ROUTINE                         8AB04880
                        *                                                       8AB04890
0082 0  C0DD            GONE  LD        SER                                     8AB04900
0083 00 4C040054              BSC  L    PRCOM,E     BR PRINT COMP INT           8AB04910
0085 0  70E3                  MDX       SAVE2                                   8AB04920
                        ********************************************          8AB04930
                        *                                                       8AB04940
                        *               REVERSE ROUTINE                         8AB04950
                        *                                                       8AB04960
0086 0  61AD            REVER LDX   1   -83                                     8AB04970
0087 00 C50000FD              LD    L1  TBL52+84                                8AB04980
0089 0  D0D7                  STO       SAVV                                    8AB04990
008A 0  1890                  SRT       16                                      8AB05000
008B 00 C50000FE        LOOP  LD    L1  TBL52+85                                8AB05010
008D 0  18C8                  RTE       8                                       8AB05020
008E 00 D50000FD              STO   L1  TBL52+84                                8AB05030
0090 0  1888                  SRT       8                                       8AB05040
0091 0  7101                  MDX   1   1                                       8AB05050
0092 0  70F8                  MDX       LOOP                                    8AB05060
0093 0  C0CD                  LD        SAVV                                    8AB05070
0094 0  18C8                  RTE       8                                       8AB05080
0095 00 D40000FD              STO   L   TBL52+84                                8AB05090
```



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0097 0  70EA                    MDX       GONE                                  8AB05100
                        ********************************************          8AB05110
                        *                                                       8AB05120
                        *               FORWARD ROUTINE                         8AB05130
                        *                                                       8AB05140
0098 0  6153            CAME  LDX   1   83                                      8AB05150
0099 00 C50000AA              LD    L1  TBL52+1                                 8AB05160
0098 0  D0C5                  STO       SAVV                                    8AB05170
009C 0  1890                  SRT       16                                      8AB05180
009D 00 C50000A9        SOOP  LD    L1  TBL52                                   8AB05190
009F 0  18D8                  RTE       24                                      8AB05200
00A0 00 D50000AA              STO   L1  TBL52+1                                 8AB05210
00A2 0  1088                  SLT       8                                       8AB05220
00A3 0  71FF                  MDX   1   -1                                      8AB05230
00A4 0  70F8                  MDX       SOOP                                    8AB05240
00A5 0  C0BB                  LD        SAVV                                    8AB05250
00A6 0  1088                  SLT       8                                       8AB05260
00A7 0  D002                  STO       TBL52+1                                 8AB05270
00A8 0  70D9                  MDX       GONE                                    8AB05280
                        ********************************************          8AB05290
00A9 0  0048            TBL52 DC        72                                      8AB05300
00AA 0  0A01                  DC        /0A01       0 (1)                       8AB05310
00AB 0  0203                  DC        /0203       2 (3)                       8AB05320
00AC 0  0405                  DC        /0405       4 (5)                       8AB05330
00AD 0  0607                  DC        /0607       6 (7)                       8AB05340
00AE 0  0809                  DC        /0809       8 (9)                       8AB05350
00AF 0  0000                  DC        /0000       BLANK, BLANK                8AB05360
00B0 0  0031                  DC        /0031       B (A) B MEANS BLANK         8AB05370
00B1 0  3233                  DC        /3233       B (C)                       8AB05380
00B2 0  3435                  DC        /3435       D (E)                       8AB05390
00B3 0  3637                  DC        /3637       F (G)                       8AB05400
00B4 0  3839                  DC        /3839       H (I)                       8AB05410
00B5 0  2122                  DC        /2122       J (K)                       8AB05420
00B6 0  2324                  DC        /2324       L (M)                       8AB05430
00B7 0  2526                  DC        /2526       N (O)                       8AB05440
00B8 0  2728                  DC        /2728       P (Q)                       8AB05450
00B9 0  2912                  DC        /2912       R (S)                       8AB05460
00BA 0  1314                  DC        /1314       T (U)                       8AB05470
00BB 0  1516                  DC        /1516       V (W)                       8AB05480
00BC 0  1718                  DC        /1718       X (Y)                       8AB05490
00BD 0  193B                  DC        /193B       Z (.)                       8AB05500
00BE 0  1B2B                  DC        /1B2B       , ($)                       8AB05510
00BF 0  0A01                  DC        /0A01       0 (1)                       8AB05520
00C0 0  0203                  DC        /0203       2 (3)                       8AB05530
00C1 0  0405                  DC        /0405       4 (5)                       8AB05540
00C2 0  0607                  DC        /0607       6 (7)                       8AB05550
00C3 0  0809                  DC        /0809       8 (9)                       8AB05560
00C4 0  0000                  DC        /0000       BLANK, BLANK                8AB05570
00C5 0  0031                  DC        /0031       B (A) B MEANS BLANK         8AB05580
00C6 0  3233                  DC        /3233       B (C)                       8AB05590
00C7 0  3435                  DC        /3435       D (E)                       8AB05600
00C8 0  3637                  DC        /3637       F (G)                       8AB05610
00C9 0  3839                  DC        /3839       H (I)                       8AB05620
00CA 0  2122                  DC        /2122       J (K)                       8AB05630
00CB 0  2324                  DC        /2324       L (M)                       8AB05640
00CC 0  2526                  DC        /2526       N (O)                       8AB05650
00CD 0  2728                  DC        /2728       P (Q)                       8AB05660
00CE 0  2912                  DC        /2912       R (S)                       8AB05670
00CF 0  1314                  DC        /1314       T (U)                       8AB05680
00D0 0  1516                  DC        /1516       V (W)                       8AB05690
00D1 0  1718                  DC        /1718       X (Y)                       8AB05700
00D2 0  193B                  DC        /193B       Z (.)                       8AB05710
00D3 0  1B2B                  DC        /1B2B       , ($)                       8AB05720
00D4 0  0A01                  DC        /0A01       0 (1)                       8AB05730
00D5 0  0203                  DC        /0203       2 (3)                       8AB05740
00D6 0  0405                  DC        /0405       4 (5)                       8AB05750
00D7 0  0607                  DC        /0607       6 (7)                       8AB05760
00D8 0  0809                  DC        /0809       8 (9)                       8AB05770
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00D9 0 0000          DC    /0000     BLANK, BLANK                  8AB05780
00DA 0 0031          DC    /0031     B (A) B MEANS BLANK           8AB05790
00DB 0 3233          DC    /3233     B (C)                         8AB05800
00DC 0 3435          DC    /3435     D (E)                         8AB05810
00DD 0 3637          DC    /3637     F (G)                         8AB05820
00DE 0 3839          DC    /3839     H (I)                         8AB05830
00DF 0 2122          DC    /2122     J (K)                         8AB05840
00E0 0 2324          DC    /2324     L (M)                         8AB05850
00E1 0 2526          DC    /2526     N (O)                         8AB05860
00E2 0 2728          DC    /2728     P (Q)                         8AB05870
00E3 0 2912          DC    /2912     R (S)                         8AB05880
00E4 0 1314          DC    /1314     T (U)                         8AB05890
00E5 0 1516          DC    /1516     V (W)                         8AB05900
00E6 0 1718          DC    /1718     X (Y)                         8AB05910
00E7 0 193B          DC    /193B     Z (.)                         8AB05920
00E8 0 1B2B          DC    /1B2B     , ($)                         8AB05930
00E9 0 0A01          DC    /0A01     0 (1)                         8AB05940
00EA 0 0203          DC    /0203     2 (3)                         8AB05950
00EB 0 0405          DC    /0405     4 (5)                         8AB05960
00EC 0 0607          DC    /0607     6 (7)                         8AB05970
00ED 0 0809          DC    /0809     8 (9)                         8AB05980
00EE 0 0000          DC    /0000     BLANK, BLANK                  8AB05990
00EF 0 0031          DC    /0031     B (A) B MEANS BLANK           8AB06000
00F0 0 3233          DC    /3233     B (C)                         8AB06010
00F1 0 3435          DC    /3435     D (E)                         8AB06020
00F2 0 3637          DC    /3637     F (G)                         8AB06030
00F3 0 3839          DC    /3839     H (I)                         8AB06040
00F4 0 2122          DC    /2122     J (K)                         8AB06050
00F5 0 2324          DC    /2324     L (M)                         8AB06060
00F6 0 2526          DC    /2526     N (O)                         8AB06070
00F7 0 2728          DC    /2728     P (Q)                         8AB06080
00F8 0 2912          DC    /2912     R (S)                         8AB06090
00F9 0 1314          DC    /1314     T (U)                         8AB06100
00FA 0 1516          DC    /1516     V (W)                         8AB06110
00FB 0 1718          DC    /1718     X (Y)                         8AB06120
00FC 0 193B          DC    /193B     Z (.)                         8AB06130
00FD 0 1B2B          DC    /1B2B     , ($)                         8AB06140
                     *                                             8AB06150
000D                 QQQQ  EQU   /D          GO TO LOADER AT /D    8AB06160
70D7                 NNNN  EQU   /70D7       FOR CARD LOADER AT /35 8AB06170
0813                 WWWW  EQU   /0813       SET IN LOADER AT /04  8AB06180
7041                 TTTT  EQU   /7000+RETUR-/4-1    THIS IS EQUAL TO 8AB06190
                     *                       THE BRANCH FROM THE LOADER 8AB06200
                     *                       TO RETUR IN THIS PROGRAM. 8AB06210
                     ********************************************** 8AB06220
00FE    00FD         END   *-1       END CARD NEVER USED           8AB06230
```


CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
A	0072	0071
AREA	0063	0042
BUILD	0041	0045
CAME	0098	0076
CEOFF	0058	0041,0043,004E,0067
CEON	005A	0046,0049,004D,006C,006E,007A,007C
GSW	005C	003E,0051,0068
GOME	0082	0079,C097,00A8
GOTA	0076	0074
GSIR	0068	004F
INIS2	005E	0054
LOOP	008B	0092
NN	0062	003C
NNNN	70D7	0062
NOTRD	0064	004B
PRCOM	0054	0083
QQQQ	000D	0069
REBIT	007A	0078
RETUR	0046	00FE
REVER	0086	0077
RPT	007E	0081
SAVE2	0069	0055,0085
SAVV	0061	0089,0093,009B,00A5
SENBI	0056	0047,0048,004A
SER	0060	0068,0082
SOOP	009D	00A4
TBL52	00A9	005E,007E,0087,008B,008E,0095,0099,009D,00A0,00A7
TTTT	7041	005C
TXFRC	006A	0052
WWWW	0813	0064

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                    ABS
028C                ORG     /36                                          8AB06240
                ************************************************         8AB06250
                *                                                        8AB06260
                *       IF THIS PROG IS TO BE USED FOR A MACHINE         8AB06270
                * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH         8AB06280
                * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST       8AB06290
                * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A         8AB06300
                * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG         8AB06310
                * GENERATOR WRITE-UP FOR PROCEDURE.                     8AB06320
                *                                                        8AB06330
                ************************************************         8AB06340
                *                                                        8AB06350
                *                                                        8AB06360
                *            1443 RIPPLE PROGRAM                         8AB06370
                *            * WITH 52 CHAR SET                          8AB06380
                *            * AND 120 OR 144                            8AB06390
                *            * PRINT POSITIONS                           8AB06400
                *            ******************                          8AB06410
                *                                                        8AB06420
                *                                                        8AB06430
                * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE       8AB06440
                *                                                        8AB06450
                *                                                        8AB06460
                *            CE SWITCH SETTINGS                          8AB06470
                *                                                        8AB06480
                *            XXXXXX00  NORMAL RIPPLE PATTERN             8AB06490
                *            XXXXXX01  REVERSE RIPPLE PATTERN            8AB06500
                *            XXXXXX11  LOCK ON LAST LINE PRINTED         8AB06510
                *            00001111   CE SERVICE STOP                  8AB06520
                *            11111111  TERMINATE RUN                     8AB06530
                *            CCCCCC10   SELECT CHARACTER TO BE           8AB06540
                *            $*$*$*      PRINTED. THE DESIRED CHAR       8AB06550
                *            $*$*$*      IS SELECTED BY MEANS OF         8AB06560
                *            $*$*$*      THE STANDARD BCD CH CODE        8AB06570
                *            $*$*$*      AS SHOWN BELOW                  8AB06580
                *            $*$*$*                                      8AB06590
                *            $*$*$*$*$*$*$*$ 1                           8AB06600
                *            $*$*$*$*$*$*$*  2                           8AB06610
                *            $*$*$*$*$*$*$   4                           8AB06620
                *            $*$*$*$*$*$*$$  8                           8AB06630
                *            $*$*$*$*$*$*$   A ZONE                      8AB06640
                *            $*$*$*$*$*$*$$  B ZONE                      8AB06650
                *                                                        8AB06660
                *                                                        8AB06670
                *            EXPLANETARY NOTES                           8AB06680
                *               THE X CHAR MEANS DOES NOT MATTER         8AB06690
                *               * UNLESS THE OPERATION CODE              8AB06700
                *               * BECOMES A TERM OR CE SERV STOP         8AB06710
                *                                                        8AB06720
                *            NOTE  PRINTING OF A SPECIFIC CHAR           8AB06730
                *                  * DESTROYS RIPPLE PATTERN             8AB06740
                *                                                        8AB06750
                *                                                        8AB06760
                *                                                        8AB06770
                * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION       8AB06780
                * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.             8AB06790
                ************************************************         8AB06800
                *                                                        8AB06810
                *            AUX PROG ENTRY POINTS                       8AB06820
                *            *********************                       8AB06830
                *                                                        8AB06840
                *            1ST PASS ENTRY                              8AB06850
                *                                                        8AB06860
                * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN      8AB06870
                * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER           8AB06880
                *                                                        8AB06890
0036 0  1000        NOP             NO OPERATION                        8AB06900
0037 0  1000        NOP             NO OPERATION                        8AB06910
```



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0038 0  1000        NOP             NO OPERATION                        8AB06920
0039 0  1000        NOP             NO OPERATION                        8AB06930
003A 0  1000        NOP             NO OPERATION                        8AB06940
003B 00 650070D7    LDX  L1 NNNN    RESTORE LOCATION NICE               8AB06950
003D 0  69F7        STX  1 /35      * IN AUX LOADER                     8AB06960
                *                                                       8AB06970
003E 0  C01D        LD      DSW     PLACE BRANCH                        8AB06980
003F 0  D0C4        STO     /04     * TO RETUR LABEL                    8AB06990
                ************************************************        8AB07000
                *                                                       8AB07010
                *           ADD AREA CODE TO THE I/O COMMANDS           8AB07020
                *                                                       8AB07030
0040 0  6107        LDX  1 7                                            8AB07040
0041 0  C158    BUILD LD    1 CEOFF     GET IOCC WORD AND               8AB07050
0042 0  E81D        OR      AREA        * OR IN AREA AND                8AB07060
0043 0  D158        STO  1 CEOFF        * PLACE BACK                    8AB07070
0044 0  71FE    SER   MDX   1 -2        NEXT TWO WORDS WILL BE          8AB07080
0045 0  70FB    SAVV  MDX     BUILD     * USED FOR STG AFTER            8AB07090
                *                       * 1ST PASS                      8AB07100
                *                                                       8AB07110
                *           ALL BUT 1ST PASS ENTRY POINT                8AB07120
                *                                                       8AB07130
0046 0  0813    RETUR XIO     CEON                                      8AB07140
0047 0  080E          XIO     SENBI     SENSE CE SW TO ACCUM            8AB07150
0048 0  E00D          AND     SENBI     BLOCK OUT PROG SEL SW           8AB07160
0049 0  D010          STO     CEON                                      8AB07170
004A 0  F00B          EOR     SENBI                                     8AB07180
004B 00 4C180061      BSC  L  NOTRD,+-  BR OUT OF PROGRAM               8AB07190
                *                                                       8AB07200
004D 0  C00C          LD      CEON                                      8AB07210
004E 0  F009          EOR     CEOFF                                     8AB07220
004F 00 4C180065      BSC  L  GSTR,+-   BR CE SERVICE STOP              8AB07230
                *                                                       8AB07240
0051 0  080A          XIO     DSW       SENSE DEVICE STATUS             8AB07250
0052 00 4C280067      BSC  L  TXFRC,+Z  BR TRANSFER COMP INT            8AB07260
                ************************************************        8AB07270
                *                                                       8AB07280
                *           PRINT INT ROUTINE                           8AB07290
                *           *****************                           8AB07300
                *                                                       8AB07310
0054 0  0809    PRCOM XIO     IN152     1443 INIT WRITE OP              8AB07320
0055 0  7010          MDX     SAVE2                                     8AB07330
                ************************************************        8AB07340
                *                                                       8AB07350
                *           CONSTANTS AND/OR IOCC WORDS                 8AB07360
                *                                                       8AB07370
0056    0000          BSS  E  0                                         8AB07380
0056 0  00FF    SENBI DC      /00FF     END COMMAND COMPARE             8AB07390
0057 0  0760          DC      /0760     SENSE CE SWITCHES               8AB07400
0058 0  000F    CEOFF DC      /000F     CONSTANT                        8AB07410
0059 0  0000          DC      /0000     CE OFF WORD                     8AB07420
005A 0  0000    CEON  DC      /0000     CHAR WORK LOC                   8AB07430
005B 0  0001          DC      /0001     CE ON WORD                      8AB07440
005C 0  7041    DSW   DC      TTTT      CONSTANT                        8AB07450
005D 0  0701          DC      /0701     DSW WORD                        8AB07460
005E 0  00A6    IN152 DC      TBL52                                     8AB07470
005F 0  0500          DC      /0500     INIT WRITE                      8AB07480
0060 0  3000    AREA  DC      /3000     1ST 1443 AREA CODE              8AB07490
                *                       * CHANGE THIS VALUE FOR A       8AB07500
                *                       * DEVICE ON ANOTHER AREA        8AB07510
                ************************************************        8AB07520
                *                                                       8AB07530
                *           EXIT POINTS TO AUX LOADER                   8AB07540
                *           *************************                   8AB07550
                *                                                       8AB07560
                *           TERMINATE EXIT POINT                        8AB07570
                *                                                       8AB07580
0061 00 65000813  NOTRD LDX  L1 WWWW                                    8AB07590
```

AUX 1443 EXERCISER
52 CHAR BAR RIPPLE EXERCISER

```
0063 0  69A0            STX   1 /04                                  8AB07600
0064 0  08F3            XIO     CEOFF                                8AB07610
                        *                                            8AB07620
                        *             CE SERVICE EXIT POINT          8AB07630
                        *                                            8AB07640
0065 0  08F6        GSTR XIO      DSW                                  8AB07650
                        *                                            8AB07660
                        *             NORMAL EXIT POINT              8AB07670
                        *                                            8AB07680
0066 0  70A6        SAVE2 MDX     QQQQ        EXIT TO AUX LOADER     8AB07690
                        ********************************************** 8AB07700
                        *                                            8AB07710
                        *             TRANSFER COMP INT              8AB07720
                        *             ******************             8AB07730
                        *                                            8AB07740
0067 0  188D        TXFRC SRT     13          TEST FOR PRINT         8AB07750
0068 0  D00B            STO     SER         * INTERRUPT LATER.       8AB07760
0069 0  C0F0            LD      CEON                                 8AB07770
006A 0  1882            SRT     2                                    8AB07780
006B 0  D0EE            STO     CEON                                 8AB07790
006C 0  1010            SLA     16                                   8AB07800
006D 0  1082            SLT     2                                    8AB07810
006E 0  D001            STO     A+1                                  8AB07820
006F 00 65000000    A   LDX   11 0                                   8AB07830
0071 00 4D800073        BSC   11 GOTA       BR TO SW OPTION          8AB07840
                        *                                            8AB07850
0073 0  0095        GOTA  DC      CAME      NORMAL RIPPLE            8AB07860
0074 0  0083            DC      REVER       REVERSE RIPPLE PATTN     8AB07870
0075 0  0077            DC      REBIT       READ BIT SWITCHES        8AB07880
0076 0  007F            DC      GONE        LOCK ON LAST LINE PR     8AB07890
                        ********************************************** 8AB07900
                        *                                            8AB07910
                        *             PRINT SW CHARACTER             8AB07920
                        *                                            8AB07930
0077 0  C0E2        REBIT LD      CEON                                 8AB07940
0078 0  1008            SLA     8                                    8AB07950
0079 0  E8E0            OR      CEON                                 8AB07960
007A 0  61A9            LDX   1 -87                                  8AB07970
0078 00 D50000FE    RPT   STO   11 TBL52+88                          8AB07980
007D 0  7101            MDX   1 1                                    8AB07990
007E 0  70FC            MDX     RPT                                  8AB08000
                        ********************************************** 8AB08010
                        *                                            8AB08020
                        *             LOCK ON ROUTINE                8AB08030
                        *                                            8AB08040
007F 0  C0C4        GONE  LD      SER                                  8AB08050
0080 00 4C040054        BSC   L   PRCOM,E     BR PRINT COMP INT      8AB08060
0082 0  70E3            MDX     SAVE2                                8AB08070
                        ********************************************** 8AB08080
                        *                                            8AB08090
                        *             REVERSE ROUTINE                8AB08100
                        *                                            8AB08110
0083 0  61AA        REVER LDX   1 -86                                8AB08120
0084 00 C50000FD        LD    11 TBL52+87                            8AB08130
0086 0  D08E            STO     SAVV                                 8AB08140
0087 0  1890            SRT     16                                   8AB08150
0088 00 C50000FE    LOOP  LD    11 TBL52+88                          8AB08160
008A 0  18C8            RTE     8                                    8AB08170
008B 00 D50000FD        STO   11 TBL52+87                            8AB08180
008D 0  1838            SRT     8                                    8AB08190
008E 0  7101            MDX   1 1                                    8AB08200
008F 0  70F8            MDX     LOOP                                 8AB08210
0090 0  C0B4            LD      SAVV                                 8AB08220
0091 0  18C8            RTE     8                                    8AB08230
0092 00 D4000GFD        STO   L   TBL52+87                           8AB08240
0094 0  70EA            MDX     GONE                                 8AB08250
                        ********************************************** 8AB08260
                        *                                            8AB08270
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AUX 1443 EXERCISER
52 CHAR BAR RIPPLE EXERCISER

```
                        *             FORWARD ROUTINE                8AB08280
                        *                                            8AB08290
0095 0  6156        CAME  LDX   1 86                                 8AB08300
0096 00 C50000A7        LD    L1 TBL52+1                             8AB08310
0098 0  D0AC            STO     SAVV                                 8AB08320
0099 0  1890            SRT     16                                   8AB08330
009A 00 C50000A6    SOOP  LD    L1 TBL52                           8AB08340
009C 0  18D8            RTE     24                                   8AB08350
009D 00 D50000A7        STO   L1 TBL52+1                           8AB08360
009F 0  1088            SLT     8                                    8AB08370
00A0 0  71FF            MDX   1 -1                                 8AB08380
00A1 0  70F8            MDX     SOOP                               8AB08390
00A2 0  C0A2            LD      SAVV                               8AB08400
00A3 0  1088            SLT     8                                  8AB08410
00A4 0  D002            STO     TBL52+1                            8AB08420
00A5 0  70D9            MDX     GONE                               8AB08430
                        ********************************************** 8AB08440
00A6 0  0048        TBL52 DC      72                                 8AB08450
00A7 0  0A01            DC      /0A01       0 (1)                  8AB08460
00A8 0  0203            DC      /0203       2 (3)                  8AB08470
00A9 0  0405            DC      /0405       4 (5)                  8AB08480
00AA 0  0607            DC      /0607       6 (7)                  8AB08490
00AB 0  0809            DC      /0809       8 (9)                  8AB08500
00AC 0  0000            DC      /0000       BLANK, BLANK           8AB08510
00AD 0  0031            DC      /0031       B (A) B MEANS BLANK    8AB08520
00AE 0  3233            DC      /3233       B (C)                  8AB08530
00AF 0  3435            DC      /3435       D (E)                  8AB08540
0080 0  3637            DC      /3637       F (G)                  8AB08550
0081 0  3839            DC      /3839       H (I)                  8AB08560
00B2 0  2122            DC      /2122       J (K)                  8AB08570
00B3 0  2324            DC      /2324       L (M)                  8AB08580
00B4 0  2526            DC      /2526       N (O)                  8AB08590
00B5 0  2728            DC      /2728       P (Q)                  8AB08600
00B6 0  2912            DC      /2912       R (S)                  8AB08610
00B7 0  1314            DC      /1314       T (U)                  8AB08620
0088 0  1516            DC      /1516       V (W)                  8AB08630
00B9 0  1718            DC      /1718       X (Y)                  8AB08640
00BA 0  1900            DC      /1900       Z (B) B MEANS BLANK    8AB08650
00BB 0  0000            DC      /0000       BLANK, BLANK           8AB08660
00BC 0  1B20            DC      /1B20       . (-)                  8AB08670
00BD 0  2C2B            DC      /2C2B       * ($)                  8AB08680
00BE 0  3B30            DC      /3B30       . (+)                  8AB08690
00BF 0  111A            DC      /111A       / ( )                  8AB08700
00C0 0  0C1C            DC      /0C1C       ; (()                  8AB08710
00C1 0  3C0D            DC      /3C0D       ) (*)                  8AB08720
00C2 0  3A24            DC      /3A24                              8AB08730
00C3 0  0B10            DC      /0B10                              8AB08740
00C4 0  0A01            DC      /0A01       0 (1)                  8AB08750
00C5 0  0203            DC      /0203       2 (3)                  8AB08760
00C6 0  0405            DC      /0405       4 (5)                  8AB08770
00C7 0  0607            DC      /0607       6 (7)                  8AB08780
00C8 0  0809            DC      /0809       8 (9)                  8AB08790
00C9 0  0000            DC      /0000       BLANK, BLANK           8AB08800
00CA 0  0031            DC      /0031       B (A) B MEANS BLANK    8AB08810
00CB 0  3233            DC      /3233       B (C)                  8AB08820
00CC 0  3435            DC      /3435       D (E)                  8AB08830
00CD 0  3637            DC      /3637       F (G)                  8AB08840
00CE 0  3839            DC      /3839       H (I)                  8AB08850
00CF 0  2122            DC      /2122       J (K)                  8AB08860
00D0 0  2324            DC      /2324       L (M)                  8AB08870
00D1 0  2526            DC      /2526       N (O)                  8AB08880
00D2 0  2728            DC      /2728       P (Q)                  8AB08890
00D3 0  2912            DC      /2912       R (S)                  8AB08900
00D4 0  1314            DC      /1314       T (U)                  8AB08910
00D5 0  1516            DC      /1516       V (W)                  8AB08920
00D6 0  1718            DC      /1718       X (Y)                  8AB08930
00D7 0  1900            DC      /1900       Z (B) B MEANS BLANK    8AB08940
00D8 0  0000            DC      /0000       BLANK, BLANK           8AB08950
```

```
00D9 0  1B20          DC      /1B20     , (-)                    8AB08960
00DA 0  2C2B          DC      /2C2B     * ($)                    8AB08970
00DB 0  3B30          DC      /3B30     . (+)                    8AB08980
00DC 0  111A          DC      /111A     / ( )                    8AB08990
00DD 0  0C1C          DC      /0C1C     % (()                    8AB09000
00DE 0  3C0D          DC      /3C0D     ) (%)                    8AB09010
00DF 0  3A24          DC      /3A24                              8AB09020
00E0 0  0B10          DC      /0B10                              8AB09030
00E1 0  0A01          DC      /0A01     0 (1)                    8AB09040
00E2 0  0203          DC      /0203     2 (3)                    8AB09050
00E3 0  0405          DC      /0405     4 (5)                    8AB09060
00E4 0  0607          DC      /0607     6 (7)                    8AB09070
00E5 0  0809          DC      /0809     8 (9)                    8AB09080
00E6 0  0000          DC      /0000     BLANK, BLANK             8AB09090
00E7 0  0031          DC      /0031     B (A) B MEANS BLANK      8AB09100
00E8 0  3233          DC      /3233     B (C)                    8AB09110
00E9 0  3435          DC      /3435     D (E)                    8AB09120
00EA 0  3637          DC      /3637     F (G)                    8AB09130
00EB 0  3839          DC      /3839     H (I)                    8AB09140
00EC 0  2122          DC      /2122     J (K)                    8AB09150
00ED 0  2324          DC      /2324     L (M)                    8AB09160
00EE 0  2526          DC      /2526     N (O)                    8AB09170
00EF 0  2728          DC      /2728     P (Q)                    8AB09180
00F0 0  2912          DC      /2912     R (S)                    8AB09190
00F1 0  1314          DC      /1314     T (U)                    8AB09200
00F2 0  1516          DC      /1516     V (W)                    8AB09210
00F3 0  1718          DC      /1718     X (Y)                    8AB09220
00F4 0  1900          DC      /1900     Z (8) B MEANS BLANK      8AB09230
00F5 0  0000          DC      /0000     BLANK, BLANK             8AB09240
00F6 0  1B20          DC      /1B20     , (-)                    8AB09250
00F7 0  2C2B          DC      /2C2B     * ($)                    8AB09260
00F8 0  3B30          DC      /3B30     . (+)                    8AB09270
00F9 0  111A          DC      /111A     / ( )                    8AB09280
00FA 0  0C1C          DC      /0C1C     % (()                    8AB09290
00FB 0  3C0D          DC      /3C0D     ) (%)                    8AB09300
00FC 0  3A24          DC      /3A24                              8AB09310
00FD 0  0B10          DC      /0B10                              8AB09320
                      *                                          8AB09330
000D          QQQQ    EQU     /D        GO TO LOADER AT /D       8AB09340
70D7          NNNN    EQU     /70D7     FOR CARD LOADER AT /35   8AB09350
0813          WWWW    EQU     /0813     SET IN LOADER AT /04     8AB09360
7041          TTTT    EQU     /7000+RETUR-/4-1   THIS IS EQUAL TO 8AB09370
                      *                 THE BRANCH FROM THE LOADER 8AB09380
                      *                 TO RETUR IN THIS PROGRAM.  8AB09390
                      ***************************************      8AB09400
00FE    00FD          END     *-1       END CARD NEVER USED      8AB09410
```


CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
A	006F	006E
AREA	0060	0042
BUILD	0041	0045
CAME	0095	0073
CEOFF	0058	0041,0043,004E,0064
CEON	005A	0046,0049,004D,0069,006B,0077,0079
DSW	005C	003E,0051,0065
GONE	007F	0076,0094,00A5
GOTA	0073	0071
GOTR	0065	004F
IMI52	005E	0054
LOOP	0088	008F
MAIN	7007	003B
NOTRD	0061	0048
PRCOM	0054	0080
QQQQ	000D	0066
REBIT	0077	0075
RETUR	0046	00FE
REVER	0083	0074
RPT	007B	007E
SAVE2	0066	0055,0082
SAVV	0045	0086,0090,0098,00A2
SENB1	0056	0047,0048,004A
SER	0044	0068,007F
SOOP	009A	00A1
TBL52	00A6	005E,007B,0084,0088,008B,0092,0096,009A,009D,00A4
TTTT	7041	005C
TXFRC	0067	0052
WWWW	0813	0061

```
                      ABS
02BC                  ORG     /36
              *****************************************************
              *
              *          IF THIS PROG IS TO BE USED FOR A MACHINE
              * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH
              * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST
              * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A
              * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG
              * GENERATOR WRITE-UP FOR PROCEDURE.
              *
              *****************************************************
              *
              *
              *            1443 RIPPLE PROGRAM
              *            * WITH 63 CHAR SET
              *            * AND 120 OR 144
              *            * PRINT POSITIONS
              *            *****************
              *
              * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE
              *
              *
              *            CE SWITCH SETTINGS
              *
              *            XXXXXX00  NORMAL RIPPLE PATTERN
              *            XXXXXX01  REVERSE RIPPLE PATTERN
              *            XXXXXX11  LOCK ON LAST LINE PRINTED
              *            00001111   CE SERVICE STOP
              *            11111111  TERMINATE RUN
              *            CCCCCC10   SELECT CHARACTER TO BE
              *            $*$*$*      PRINTED. THE DESIRED CHAR
              *            $*$*$*      IS SELECTED BY MEANS OF
              *            $*$*$*      THE STANDARD BCD CH CODE
              *            $*$*$*      AS SHOWN BELOW
              *            $*$*$*
              *            $*$*$******* 1
              *            $*$*$$$$$$ 2
              *            $*$******** 4
              *            $*$$$$$$$$ 8
              *            $********** A ZONE
              *            $$$$$$$$$$ B ZONE
              *
              *
              *            EXPLANETARY NOTES
              *               THE X CHAR MEANS DOES NOT MATTER
              *               * UNLESS THE OPERATION CODE
              *               * BECOMES A TERM OR CE SERV STOP
              *
              *            NOTE  PRINTING OF A SPECIFIC CHAR
              *                  * DESTROYS RIPPLE PATTERN
              *
              *
              *
              * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION
              * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.
              *******************************************
              *
              *            AUX PROG ENTRY POINTS
              *            *********************
              *
              *            1ST PASS ENTRY
              *
              * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN
              * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER
              *
0036 0  1000          NOP                NO OPERATION
0037 0  1000          NOP                NO OPERATION
```



```
0038 0  1000          NOP                NO OPERATION
0039 0  1000          NOP                NO OPERATION
003A 0  1000          NOP                NO OPERATION
003B 0  1000          NOP                NO OPERATION
003C 0  C025          LD      NN         RESTORE LOC NICE
003D 0  D0F7          STO     /35        * IN AUX LOADER
              *
003E 0  C01D          LD      DSW        PLACE BRANCH
003F 0  D0C4          STO     /04        * TO RETUR LABEL
              ***********************************************
              *
              *            ADD AREA CODE TO THE I/O COMMANDS
              *
0040 0  6107          LDX   1 7
0041 0  C158    BUILD LD    1 CEOFF      GET IOCC WORD AND
0042 0  E820          OR      AREA       * OR IN AREA AND
0043 0  D158          STO   1 CEOFF      * PLACE BACK
0044 0  71FE          MDX   1 -2
0045 0  70FB          MDX     BUILD
              *
              *            ALL BUT 1ST PASS ENTRY POINT
              *
0046 0  0813    RETUR XIO     CEON
0047 0  080E          XIO     SENBI      SENSE CE SW TO ACCUM
0048 0  E00D          AND     SENBI      BLOCK OUT PROG SEL SW
0049 0  D010          STO     CEON
004A 0  F00B          EOR     SENBI
004B 00 4C180064      BSC  L  NOTRD,+-   BR OUT OF PROGRAM
              *
004D 0  F00A          EOR     CEOFF
004E 00 4C180068      BSC  L  GSTR,+-    BR CE SERVICE STOP
              *
0050 0  080B          XIO     DSW        SENSE DEVICE STATUS
0051 00 4C28006A      BSC  L  TXFRC,+Z   BR TRANSFER COMP INT
              ***********************************************
              *
              *            PRINT INT ROUTINE
              *            *****************
              *
0053 0  080A    PRCOM XIO     INI52      1443 INIT WRITE OP
0054 0  7014          MDX     SAVE2
              ***********************************************
              *
              *            CONSTANTS AND/OR IOCC WORDS
              *
0056    0000          BSS  E  0
0056 0  00FF    SENBI DC      /00FF      END COMMAND COMPARE
0057 0  0760          DC      /0760      SENSE CE SWITCHES
0058 0  00F0    CEOFF DC      /00F0
0059 0  0000          DC      /0000      CE OFF WORD
005A 0  0000    CEON  DC      /0000      CHAR WORK LOC
005B 0  0001          DC      /0001      CE ON WORD
005C 0  7041    DSW   DC      TTTT
005D 0  0701          DC      /0701      DSW WORD
005E 0  00A9    INI52 DC      TBL52
005F 0  0500          DC      /0500      INIT WRITE
0060 0  0000    SER   DC      0
0061 0  0000    SAVV  DC      0
0062 0  7007    NN    DC      NNNN
0063 0  3000    AREA  DC      /3000      1ST 1443 AREA CODE
              *                          * CHANGE THIS VALUE FOR A
              *                          * DEVICE ON ANOTHER AREA
              ***********************************************
              *
              *            EXIT POINTS TO AUX LOADER
              *            *************************
              *
              *            TERMINATE EXIT POINT
```

```
                        *                                                    8AB10790
0064 00 65000813        NOTRD LDX  L1 WWWW                                   8AB10800
0066 0  699D                  STX   1 /04                                    8AB10810
0067 0  08F0                  XIO     CEOFF                                  8AB10820
                        *                                                    8AB10830
                        *               CE SERVICE EXIT POINT                8AB10840
                        *                                                    8AB10850
0068 0  08F3            GSTR  XIO       DSW                                  8AB10860
                        *                                                    8AB10870
                        *               NORMAL EXIT POINT                    8AB10880
                        *                                                    8AB10890
0069 0  70A3            SAVE2 MDX       QQQQ        EXIT TO AUX LOADER       8AB10900
                        ********************************************         8AB10910
                        *                                                    8AB10920
                        *               TRANSFER COMP INT                    8AB10930
                        *               *****************                    8AB10940
                        *                                                    8AB10950
006A 0  188D            TXFRC SRT       13          TEST FOR PRINT           8AB10960
006B 0  D0F4                  STO       SER         * INTERRUPT LATER        8AB10970
006C 0  C0ED                  LD        CEON                                 8AB10980
006D 0  1882                  SRT       2                                    8AB10990
006E 0  D0EB                  STO       CEON                                 8AB11000
006F 0  1010                  SLA       16                                   8AB11010
0070 0  1082                  SLT       2                                    8AB11020
0071 0  D001                  STO       A+1                                  8AB11030
0072 00 65000000 .      A     LDX  L1   0                                    8AB11040
0074 00 40800076              BSC  11   GOTA        BR TO SW OPTION          8AB11050
                        *                                                    8AB11060
0076 0  0098            GOTA  DC        CAME        NORMAL RIPPLE            8AB11070
0077 0  0086                  DC        REVER       REVERSE R'PPLE PATTN     8AB11080
0078 0  007A                  DC        REBIT       READ BIT SWITCHES        8AB11090
0079 0  0082                  DC        GONE        LOCK ON LAST LINE PR     8AB11100
                        ********************************************         8AB11110
                        *                                                    8AB11120
                        *               PRINT SW CHARACTER                   8AB11130
                        *                                                    8AB11140
007A 0  C0DF            REBIT LD        CEON                                 8AB11150
007B 0  1008                  SLA       8                                    8AB11160
007C 0  E8DD                  OR        CEON                                 8AB11170
007D 0  61B8                  LDX   1   -72                                  8AB11180
007E 00 D50000F2        RPT   STO   L1  TBL52+73                             8AB11190
0080 0  7101                  MDX   1   1                                    8AB11200
0081 0  70FC                  MDX       RPT                                  8AB11210
                        ********************************************         8AB11220
                        *                                                    8AB11230
                        *               LOCK ON ROUTINE                      8AB11240
                        *                                                    8AB11250
0082 0  C0DD            GONE  LD        SER                                  8AB11260
0083 00 4C040053              BSC   L   PRCOM,E     BR PRINT COMP INT        8AB11270
0085 0  70E3                  MDX       SAVE2                                8AB11280
                        ********************************************         8AB11290
                        *                                                    8AB11300
                        *               REVERSE ROUTINE                      8AB11310
                        *                                                    8AB11320
0086 0  61B9            REVER LDX   1   -71                                  8AB11330
0087 00 C50000F1              LD    L1  TBL52+72                             8AB11340
0089 0  D0D7                  STO       SAVV                                 8AB11350
008A 0  1890                  SRT       16                                   8AB11360
008B 00 C50000F2        LOOP  LD    L1  TBL52+73                             8AB11370
008D 0  18C8                  RTE       8                                    8AB11380
008E 00 D50000F1              STO   L1  TBL52+72                             8AB11390
0090 0  1888                  SRT       8                                    8AB11400
0091 0  7101                  MDX   1   1                                    8AB11410
0092 0  70F8                  MDX       LOOP                                 8AB11420
0093 0  C0CD                  LD        SAVV                                 8AB11430
0094 0  18C8                  RTE       8                                    8AB11440
0095 00 D40000F1              STO   L   TBL52+72                             8AB11450
0097 0  70EA                  MDX       GONE                                 8AB11460
```



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                        ********************************************         8AB11470
                        *                                                    8AB11480
                        *               FORWARD ROUTINE                      8AB11490
                        *                                                    8AB11500
0098 0  6147            CAME  LDX   1   71                                   8AB11510
0099 00 C50000AA              LD    L1  TBL52+1                              8AB11520
009B 0  D0C5                  STO       SAVV                                 8AB11530
009C 0  1890                  SRT       16                                   8AB11540
009D 00 C50000A9        SOOP  LD    L1  TBL52                                8AB11550
009F 0  18D8                  RTE       24                                   8AB11560
00A0 00 D50000AA              STO   L1  TBL52+1                              8AB11570
00A2 0  1088                  SLT       8                                    8AB11580
00A3 0  71FF                  MDX   1   -1                                   8AB11590
00A4 0  70F8                  MDX       SOOP                                 8AB11600
00A5 0  C0BB                  LD        SAVV                                 8AB11610
00A6 0  1088                  SLT       8                                    8AB11620
00A7 0  D002                  STO       TBL52+1                              8AB11630
00A8 0  70D9                  MDX       GONE                                 8AB11640
                        ********************************************         8AB11650
00A9 0  0048            TBL52 DC        72                                   8AB11660
00AA 0  0A01                  DC        /0A01       0 (1)                    8AB11670
00AB 0  0203                  DC        /0203       2 (3)                    8AB11680
00AC 0  0405                  DC        /0405       4 (5)                    8AB11690
00AD 0  0607                  DC        /0607       6 (7)                    8AB11700
00AE 0  0809                  DC        /0809       8 (9)                    8AB11710
00AF 0  0000                  DC        /0000       BLANK, BLANK             8AB11720
00B0 0  0000                  DC        /0000       BLANK, BLANK             8AB11730
00B1 0  0031                  DC        /0031       B (A) B MEANS BLANK      8AB11740
00B2 0  3233                  DC        /3233       B (C)                    8AB11750
00B3 0  3435                  DC        /3435       D (E)                    8AB11760
00B4 0  3637                  DC        /3637       F (G)                    8AB11770
00B5 0  3839                  DC        /3839       H (I)                    8AB11780
00B6 0  2122                  DC        /2122       J (K)                    8AB11790
00B7 0  2324                  DC        /2324       L (M)                    8AB11800
00B8 0  2526                  DC        /2526       N (O)                    8AB11810
00B9 0  2728                  DC        /2728       P (Q)                    8AB11820
00BA 0  2912                  DC        /2912       R (S)                    8AB11830
00BB 0  1314                  DC        /1314       T (U)                    8AB11840
00BC 0  1516                  DC        /1516       V (W)                    8AB11850
00BD 0  1718                  DC        /1718       X (Y)                    8AB11860
00BE 0  1900                  DC        /1900       Z, BLANK                 8AB11870
00BF 0  0000                  DC        /0000       BLANK, BLANK             8AB11880
00C0 0  002F                  DC        /002F       SLANK,                   8AB11890
00C1 0  1B20                  DC        /1B20       , (-)                    8AB11900
00C2 0  2C2B                  DC        /2C2B       * (+)                    8AB11910
00C3 0  3B30                  DC        /3B30       . (+)                    8AB11920
00C4 0  111A                  DC        /111A       ; ( )                    8AB11930
00C5 0  0C1C                  DC        /0C1C       * ((,)                   8AB11940
00C6 0  3C0D                  DC        /3C0D       ) (*)                    8AB11950
00C7 0  3A24                  DC        /3A24                                8AB11960
00C8 0  0810                  DC        /0810                                8AB11970
00C9 0  103A                  DC        /103A                                8AB11980
00CA 0  2A0B                  DC        /2A0B                                8AB11990
00CB 0  1D1E                  DC        /1D1E                                8AB12000
00CC 0  2E0F                  DC        /2E0F                                8AB12010
00CD 0  1F3F                  DC        /1F3F                                8AB12020
00CE 0  0A01                  DC        /0A01       0 (1)                    8AB12030
00CF 0  0203                  DC        /0203       2 (3)                    8AB12040
00D0 0  0405                  DC        /0405       4 (5)                    8AB12050
00D1 0  0607                  DC        /0607       6 (7)                    8AB12060
00D2 0  0809                  DC        /0809       8 (9)                    8AB12070
00D3 0  0000                  DC        /0000       BLANK, BLANK             8AB12080
00D4 0  0000                  DC        /0000       BLANK, BLANK             8AB12090
00D5 0  0031                  DC        /0031       B (A) B MEANS BLANK      8AB12100
00D6 0  3233                  DC        /3233       B (C)                    8AB12110
00D7 0  3435                  DC        /3435       D (E)                    8AB12120
00D8 0  3637                  DC        /3637       F (G)                    8AB12130
00D9 0  3839                  DC        /3839       H (I)                    8AB12140
```

AUX 1443 EXERCISER
63 CHAR BAR RIPPLE EXERCISER

```
00DA 0  2122            DC      /2122     J (K)                    8AB12150
00DB 0  2324            DC      /2324     L (M)                    8AB12160
00DC 0  2526            DC      /2526     N (O)                    8AB12170
00DD 0  2728            DC      /2728     P (Q)                    8AB12180
00DE 0  2912            DC      /2912     R (S)                    8AB12190
00DF 0  1314            DC      /1314     T (U)                    8AB12200
00E0 0  1516            DC      /1516     V (W)                    8AB12210
00E1 0  1718            DC      /1718     X (Y)                    8AB12220
00E2 0  1900            DC      /1900     Z, BLANK                 8AB12230
00E3 0  0000            DC      /0000     BLANK, BLANK             8AB12240
00E4 0  002F            DC      /002F     BLANK,                   8AB12250
00E5 0  1820            DC      /1820     , (-)                    8AB12260
00E6 0  2C2B            DC      /2C2B     * ($)                    8AB12270
00E7 0  3B30            DC      /3830     . (+)                    8AB12280
00E8 0  111A            DC      /111A     / ( )                    8AB12290
00E9 0  0C1C            DC      /0C1C     ' (()                    8AB12300
00EA 0  3C0D            DC      /3C0D     ) (*)                    8AB12310
00EB 0  3A24            DC      /3A24                              8AB12320
00EC 0  0B10            DC      /0310                              8AB12330
00ED 0  103A            DC      /103A                              8AB12340
00EE 0  2A0B            DC      /2A0B                              8AB12350
00EF 0  1D1E            DC      /1D1E                              8AB12360
00F0 0  2E0F            DC      /2E0F                              8AB12370
00F1 0  1F3F            DC      /1F3F                              8AB12380
                *                                                  8AB12390
000D            QQQQ    EQU     /D        GO TO LOADER AT /D       8AB12400
70D7            NNNN    EQU     /70D7     FOR CARD LOADER AT /35   8AB12410
0813            WWWW    EQU     /0813     SET IN LOADER AT /04     8AB12420
7041            TTTT    EQU     /7000+RETUR-/4-1   THIS IS EQUAL TO 8AB12430
                *                         THE BRANCH FROM THE LOADER 8AB12440
                *                         TO RETUR IN THIS PROGRAM. 8AB12450
                ********************************************       8AB12460
00F2    00F1            END     *-1       END CARD NEVER USED      8AB12470
```


AUX 1443 EXERCISER
63 CHAR BAR RIPPLE EXERCISER

CROSS REFERENCE LISTING

```
SYMBOL  VALUE   REFERENCES
A       0072    0071
AREA    0063    0042
BUILD   0041    0045
CAME    0098    0076
CEOFF   0058    0041,0043,004D,0067
CEON    005A    0046,0049,006C,006E,007A,007C
DSW     005C    003E,0050,0068
GONE    0082    0079,0097,00A8
GOTA    0076    0074
GSIR    0068    004E
INIS2   005E    0053
LOOP    008B    0092
NN      0062    003C
NNNN    70D7    0062
NOTRD   0064    004B
PRCOM   0053    0083
QQQQ    000D    0069
REBIT   007A    0078
RETUR   0046    00F2
REVER   0086    0077
RPT     007E    0081
SAVE2   0069    0054,0085
SAVV    0061    0089,0073,009B,00A5
SENBI   0056    0047,0048,004A
SER     0060    0068,0082
SOOP    009D    00A4
TBL52   00A9    005E,007E,0087,008B,008E,0095,0099,009D,00A0,00A7
TTTT    7041    005C
TXFRC   006A    0051
WWWW    0813    0064
```

```
02BC                ABS                                          8AB12480
                    ORG     /36                                  8AB12490
                ************************************************ 8AB12500
                *                                                8AB12510
                *       IF THIS PROG IS TO BE USED FOR A MACHINE 8AB12520
                * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH 8AB12530
                * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST 8AB12540
                * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A 8AB12550
                * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG 8AB12560
                * GENERATOR WRITE-UP FOR PROCEDURE.             8AB12570
                *                                               8AB12580
                ************************************************ 8AB12590
                *                                               8AB12600
                *                                               8AB12610
                *           1443 FLOATING 0 REGISTRATION TEST   8AB12620
                *           * WITH 13 CHAR SET                  8AB12630
                *           * AND 120 OR 144                    8AB12640
                *           * PRINT POSITIONS                   8AB12650
                *           ******************                  8AB12660
                *                                               8AB12670
                * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE 8AB12680
                *                                               8AB12690
                *           CE SWITCH SETTINGS                  8AB12700
                *                                               8AB12710
                *           XXXXXX00  NORMAL FLOAT PATTERN      8AB12720
                *           XXXXXX01  REVERSE FLOAT PATTERN     8AB12730
                *           XXXXXX11  LOCK ON LAST LINE PRINTED 8AB12740
                *           0000.111   CE SERVICE STOP          8AB12750
                *           11111111  TERMINATE RUN             8AB12760
                *           CCCCCC10   SELECT CHARACTER TO BE   8AB12770
                *           $*$*$*     PRINTED. THE DESIRED CHAR 8AB12780
                *           $*$*$*     IS SELECTED BY MEANS OF  8AB12790
                *           $*$*$*     THE STANDARD BCD CH CODE 8AB12800
                *           $*$*$*     AS SHOWN BELOW           8AB12810
                *           $*$*$*                              8AB12820
                *           $*$*$*$*$*$*$*$ 1                   8AB12830
                *           $*$*$*$*$*$*$*$ 2                   8AB12840
                *           $*$*$*$*$*$*$*$ 4                   8AB12850
                *           $*$*$*$*$*$*$*$ 8                   8AB12860
                *           $*$*$*$*$*$*$*$ A ZONE              8AB12870
                *           $*$*$*$*$*$*$*$ B ZONE              8AB12880
                *                                               8AB12890
                *                                               8AB12900
                *           EXPLANETARY NOTES                   8AB12910
                *              THE X CHAR MEANS DOES NOT MATTER 8AB12920
                *              * UNLESS THE OPERATION CODE      8AB12930
                *              * BECOMES A TFRM OR CE SERV STOP 8AB12940
                *                                               8AB12950
                *           NOTE  PRINTING OF A SPECIFIC CHAR   8AB12960
                *                 * DESTROYS RIPPLE PATTERN     8AB12970
                *                                               8AB12980
                *                                               8AB12990
                *                                               8AB13000
                * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION 8AB13010
                * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.    8AB13020
                ************************************************ 8AB13030
                *                                               8AB13040
                *           AUX PROG ENTRY POINTS               8AB13050
                *           *********************               8AB13060
                *                                               8AB13070
                *           1ST PASS ENTRY                      8AB13080
                *                                               8AB13090
                * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN 8AB13100
                * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER  8AB13110
                *                                               8AB13120
0036 0  1000        NOP             NO OPERATION                8AB13130
0037 0  1000        NOP             NO OPERATION                8AB13140
0038 0  1000        NOP             NO OPERATION                8AB13150
```



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0039 0  1000        NOP             NO OPERATION                8AB13160
003A 0  1000        NOP             NO OPERATION                8AB13170
003B 0  1000        NOP             NO OPERATION                8AB13180
003C 0  C025        LD      NN      RESTORE LOC NICE            8AB13190
003D 0  D0F7        STO     /35     * IN AUX LOADER             8AB13200
                    *                                           8AB13210
003E 0  C01D        LD      DSW     PLACE BRANCH                8AB13220
003F 0  D0C4        STO     /04     * TO RETUR LABEL            8AB13230
                ************************************************ 8AB13240
                *                                               8AB13250
                *           ADD AREA CODE TO THE I,O COMMANDS   8AB13260
                *                                               8AB13270
0040 0  6107        LDX     1 7                                 8AB13280
0041 0  C158    BUILD LD    1 CEOFF     GET IOCC WORD AND       8AB13290
0042 0  E820        OR      AREA        * OR IN AREA AND        8AB13300
0043 0  D158        STO     1 CEOFF     * PLACE BACK            8AB13310
0044 0  71FE        MDX     1 -2                                8AB13320
0045 0  70FB        MDX     BUILD                               8AB13330
                    *                                           8AB13340
                    *           ALL BUT 1ST PASS ENTRY POINT    8AB13350
                    *                                           8AB13360
0046 0  0813    RETUR XIO       CEON                            8AB13370
0047 0  080E        XIO     SENBI       SENSE CE SW TO ACCUM    8AB13380
0048 0  E00D        AND     SENBI       BLOCK OUT PROG SEL SW   8AB13390
0049 0  D010        STO     CEON                                8AB13400
004A 0  F00B        EOR     SENBI                               8AB13410
004B 00 4C180064    BSC  L  NOTRD,+-    BR OUT OF PROGRAM       8AB13420
                    *                                           8AB13430
004D 0  C00C        LD      CEON                                8AB13440
004E 0  F009        EOR     CEOFF                               8AB13450
004F 00 4C180068    BSC  L  GSTR,+-     BR CE SERVICE STOP      8AB13460
                    *                                           8AB13470
0051 0  080A        XIO     DSW         SENSE DEVICE STATUS     8AB13480
0052 00 4C28006A    BSC  L  TXFRC,+Z    BR TRANSFER COMP INT    8AB13490
                ************************************************ 8AB13500
                *                                               8AB13510
                *           PRINT INT ROUTINE                   8AB13520
                *           *****************                   8AB13530
                *                                               8AB13540
0054 0  0809    PRCOM XIO       INI52       1443 INIT WRITE OP  8AB13550
0055 0  7013        MDX         SAVE2                           8AB13560
                ************************************************ 8AB13570
                *                                               8AB13580
                *           CONSTANTS AND/OR IOCC WORDS         8AB13590
                *                                               8AB13600
0056    0000        BSS  E  0                                   8AB13610
0056 0  00FF    SENBI DC        /00FF       END COMMAND COMPARE 8AB13620
0057 0  0760        DC          /0760       SENSE CE SWITCHES   8AB13630
0058 0  000F    CEOFF DC        /000F                           8AB13640
0059 0  0000        DC          /0000       CE OFF WORD         8AB13650
005A 0  0000    CEON  DC        /0000       CHAR WORK LOC       8AB13660
005B 0  0001        DC          /0001       CE ON WORD          8AB13670
005C 0  7041    DSW   DC        TTTT                            8AB13680
005D 0  0701        DC          /0701       DSW WORD            8AB13690
005E 0  00A9    INI52 DC        TBL52                           8AB13700
005F 0  0500        DC          /0500       INIT WRITE          8AB13710
0060 0  0000    SER   DC        0                               8AB13720
0061 0  0000    SAVV  DC        0                               8AB13730
0062 0  70D7    NN    DC        NNNN                            8AB13740
0063 0  3000    AREA  DC        /3000       1ST 1443 AREA CODE  8AB13750
                    *                       * DEVICE ON ANOTHER AREA 8AB13760
                    *                       * CHANGE THIS VALUE FOR A 8AB13770
                ************************************************ 8AB13780
                *                                               8AB13790
                *           EXIT POINTS TO AUX LOADER           8AB13800
                *           *************************           8AB13810
                *                                               8AB13820
                *           TERMINATE EXIT POINT                8AB13830
```

```
                        *                                                    8AB13840
0064 00 65000813        NOTRD LDX  L1 WWWW                                   8AB13850
0066 0  699D                  STX   1 /04                                    8AB13860
0067 0  08F0                  XIO     CEOFF                                  8AB13870
                        *                                                    8AB13880
                        *             CE SERVICE EXIT POINT                  8AB13890
                        *                                                    8AB13900
0068 0  08F3            GSTR  XIO     DSW                                    8AB13910
                        *                                                    8AB13920
                        *             NORMAL EXIT POINT                      8AB13930
                        *                                                    8AB13940
0069 0  70A3            SAVE2 MDX     QQQQ      EXIT TO AUX LOADER           8AB13950
                        ********************************************         8AB13960
                        *                                                    8AB13970
                        *             TRANSFER COMP INT                      8AB13980
                        *             ****************                       8AB13990
                        *                                                    8AB14000
006A 0  188D            TXFRC SRT     13        TEST FOR PRINT               8AB14010
006B 0  D0F4                  STO     SER       * INTERRUPT LATER            8AB14020
006C 0  C0ED                  LD      CEON                                   8AB14030
006D 0  1882                  SRT     2                                      8AB14040
006E 0  D0EB                  STO     CEON                                   8AB14050
006F 0  1010                  SLA     16                                     8AB14060
0070 0  1082                  SLT     2                                      8AB14070
0071 0  D001                  STO     A+1                                    8AB14080
0072 00 65000000  -     A     LDX  L1 0                                      8AB14090
0074 00 4D800076              BSC  I1 GOTA      BR TO SW OPTION              8AB14100
                        *                                                    8AB14110
0076 0  0098            GOTA  DC      CAME      NORMAL RIPPLE                8AB14120
0077 0  0086                  DC      REVER     REVERSE RIPPLE PATTN         8AB14130
0078 0  007A                  DC      REBIT     READ BIT SWITCHES            8AB14140
0079 0  0082                  DC      GONE      LOCK ON LAST LINE PR         8AB14150
                        ********************************************         8AB14160
                        *                                                    8AB14170
                        *             PRINT SW CHARACTER                     8AB14180
                        *                                                    8AB14190
007A 0  C0DF            REBIT LD      CEON                                   8AB14200
007B 0  1008                  SLA     8                                      8AB14210
007C 0  E8DD                  OR      CEON                                   8AB14220
007D 0  6188                  LDX   1 -72                                    8AB14230
007E 00 D50000F2        RPT   STO  L1 TBL52+73                               8AB14240
0080 0  7101                  MDX   1 1                                      8AB14250
0081 0  70FC                  MDX     RPT                                    8AB14260
                        ********************************************         8AB14270
                        *                                                    8AB14280
                        *             LOCK ON ROUTINE                        8AB14290
                        *                                                    8AB14300
0082 0  C0DD            GONE  LD      SER                                    8AB14310
0083 00 4C040054              BSC  L  PRCOM,E   BR PRINT COMP INT            8AB14320
0085 0  70E3                  MDX     SAVE2                                  8AB14330
                        ********************************************         8AB14340
                        *                                                    8AB14350
                        *             REVERSE ROUTINE                        8AB14360
                        *                                                    8AB14370
0086 0  6189            REVER LDX   1 -71                                    8AB14380
0087 00 C50000F1              LD   L1 TBL52+72                               8AB14390
0089 0  D0D7                  STO     SAVV                                   8AB14400
008A 0  1890                  SRT     16                                     8AB14410
008B 00 C50000F2        LOOP  LD   L1 TBL52+73                               8AB14420
008D 0  18C8                  RTE     8                                      8AB14430
008E 00 D50000F1              STO  L1 TBL52+72                               8AB14440
0090 0  1888                  SRT     8                                      8AB14450
0091 0  7101                  MDX   1 1                                      8AB14460
0092 0  70F8                  MDX     LOOP                                   8AB14470
0093 0  C0CD                  LD      SAVV                                   8AB14480
0094 0  18C8                  RTE     8                                      8AB14490
0095 00 D40000F1              STO  L  TBL52+72                               8AB14500
0097 0  70EA                  MDX     GONE                                   8AB14510
```



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                        ********************************************         8AB14520
                        *                                                    8AB14530
                        *             FORWARD ROUTINE                        8AB14540
                        *                                                    8AB14550
0098 0  6147            CAME  LDX   1 71                                     8AB14560
0099 00 C50000AA              LD   L1 TBL52+1                                8AB14570
009B 0  D0C5                  STO     SAVV                                   8AB14580
009C 0  1890                  SRT     16                                     8AB14590
009D 00 C50000A9        SOOP  LD   L1 TBL52                                  8AB14600
009F 0  18D8                  RTE     24                                     8AB14610
00A0 00 D50000AA              STO  L1 TBL52+1                                8AB14620
00A2 0  1088                  SLT     8                                      8AB14630
00A3 0  71FF                  MDX   1 -1                                     8AB14640
00A4 0  70F8                  MDX     SOOP                                   8AB14650
00A5 0  C0BB                  LD      SAVV                                   8AB14660
00A6 0  1088                  SLT     8                                      8AB14670
00A7 0  D002                  STO     TBL52+1                                8AB14680
00A8 0  70D9                  MDX     GONE                                   8AB14690
                        ********************************************         8AB14700
00A9 0  0048            TBL52 DC      72                                     8AB14710
00AA 0  0808                  DC      /0808     8, 8                         8AB14720
00AB 0  0808                  DC      /0808     8, 8                         8AB14730
00AC 0  0808                  DC      /0808     8, 8                         8AB14740
00AD 0  0808                  DC      /0808     8, 8                         8AB14750
00AE 0  0808                  DC      /0808     8, 8                         8AB14760
00AF 0  0808                  DC      /0808     8, 8                         8AB14770
00B0 0  0808                  DC      /0808     8, 8                         8AB14780
00B1 0  0808                  DC      /0808     8, 8                         8AB14790
00B2 0  0808                  DC      /0808     8, 8                         8AB14800
00B3 0  0808                  DC      /0808     8, 8                         8AB14810
00B4 0  0808                  DC      /0808     8, 8                         8AB14820
00B5 0  0808                  DC      /0808     8, 8                         8AB14830
00B6 0  0808                  DC      /0808     8, 8                         8AB14840
00B7 0  0808                  DC      /0808     8, 8                         8AB14850
00B8 0  0808                  DC      /0808     8, 8                         8AB14860
00B9 0  0808                  DC      /0808     8, 8                         8AB14870
00BA 0  0808                  DC      /0808     8, 8                         8AB14880
00BB 0  0808                  DC      /0808     8, 8                         8AB14890
00BC 0  0808                  DC      /0808     8, 8                         8AB14900
00BD 0  0808                  DC      /0808     8, 8                         8AB14910
00BE 0  0808                  DC      /0808     8, 8                         8AB14920
00BF 0  0808                  DC      /0808     8, 8                         8AB14930
00C0 0  0808                  DC      /0808     8, 8                         8AB14940
00C1 0  0808                  DC      /0808     8, 8                         8AB14950
00C2 0  0808                  DC      /0808     8, 8                         8AB14960
00C3 0  0808                  DC      /0808     8, 8                         8AB14970
00C4 0  0808                  DC      /0808     8, 8                         8AB14980
00C5 0  0808                  DC      /0808     8, 8                         8AB14990
00C6 0  0808                  DC      /0808     8, 8                         8AB15000
00C7 0  0808                  DC      /0808     8, 8                         8AB15010
00C8 0  0808                  DC      /0808     8, 8                         8AB15020
00C9 0  0808                  DC      /0808     8, 8                         8AB15030
00CA 0  0808                  DC      /0808     8, 8                         8AB15040
00CB 0  0808                  DC      /0808     8, 8                         8AB15050
00CC 0  080A                  DC      /080A     8, 0                         8AB15060
00CD 0  0A0A                  DC      /0A0A     0, 0                         8AB15070
00CE 0  0808                  DC      /0808     8, 8                         8AB15080
00CF 0  0808                  DC      /0808     8, 8                         8AB15090
00D0 0  0808                  DC      /0808     8, 8                         8AB15100
00D1 0  0808                  DC      /0808     8, 8                         8AB15110
00D2 0  0808                  DC      /0808     8, 8                         8AB15120
00D3 0  0808                  DC      /0808     8, 8                         8AB15130
00D4 0  0808                  DC      /0808     8, 8                         8AB15140
00D5 0  0808                  DC      /0808     8, 8                         8AB15150
00D6 0  0808                  DC      /0808     8, 8                         8AB15160
00D7 0  0808                  DC      /0808     8, 8                         8AB15170
00D8 0  0808                  DC      /0808     8, 8                         8AB15180
00D9 0  0808                  DC      /0808     8, 8                         8AB15190
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00DA 0  0808            DC      /0808       8, 8                        8AB15200
00DB 0  0808            DC      /0808       8, 8                        8AB15210
00DC 0  0808            DC      /0808       8, 8                        8AB15220
00DD 0  0808            DC      /0808       8, 8                        8AB15230
00DE 0  0808            DC      /0808       8, 8                        8AB15240
00DF 0  0808            DC      /0808       8, 8                        8AB15250
00E0 0  0808            DC      /0808       8, 8                        8AB15260
00E1 0  0808            DC      /0808       8, 8                        8AB15270
00E2 0  0808            DC      /0808       8, 8                        8AB15280
00E3 0  0808            DC      /0808       8, 8                        8AB15290
00E4 0  0808            DC      /0808       8, 8                        8AB15300
00E5 0  0808            DC      /0808       8, 8                        8AB15310
00E6 0  0808            DC      /0808       8, 8                        8AB15320
00E7 0  0808            DC      /0808       8, 8                        8AB15330
00E8 0  0808            DC      /0808       8, 8                        8AB15340
00E9 0  0808            DC      /0808       8, 8                        8AB15350
00EA 0  0808            DC      /0808       8, 8                        8AB15360
00EB 0  0808            DC      /0808       8, 8                        8AB15370
00EC 0  0808            DC      /0808       8, 8                        8AB15380
00ED 0  0808            DC      /0808       8, 8                        8AB15390
00EE 0  0808            DC      /0808       8, 8                        8AB15400
00EF 0  0808            DC      /0808       8, 8                        8AB15410
00F0 0  080A            DC      /080A       8, 0                        8AB15420
00F1 0  0A0A            DC      /0A0A       0, 0                        8AB15430
                        *                                               8AB15440
000D                    QQQQ    EQU     /D          GO TO LOADER AT /D  8AB15450
70D7                    NNNN    EQU     /70D7       FOR CARD LOADER AT /35  8AB15460
0813                    WWWW    EQU     /0813       SET IN LOADER AT /04    8AB15470
7041                    TTTT    EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO 8AB15480
                        *                           THE BRANCH FROM THE LOADER 8AB15490
                        *                           TO RETUR IN THIS PROGRAM.  8AB15500
                        ********************************************** 8AB15510
00F2    00F1                    END     *-1         END CARD NEVER USED 8AB15520
```


CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
A	0072	0071
AREA	0063	0042
BUILD	0041	0045
CAME	0098	0076
CEOFF	0058	0041,0043,004E,0067
CEON	005A	0046,0049,004D,006C,006E,007A,007C
DSW	005C	003E,0051,0068
GOTE	0082	0079,0097,00A8
GOTA	0076	0074
GSTR	0068	004F
INI52	005E	0054
LOOP	008B	0092
NO	0062	003C
NNNN	70D7	0062
NOTRD	0064	0048
PRCOM	0054	0083
QQQQ	000D	0069
REBIT	007A	0078
RETUR	0046	00F2
REVER	0086	0077
RPT	007E	0081
SAVE2	0069	0055,0085
SAVV	0061	0089,0093,009B,00A5
SENBI	0056	0047,0048,004A
SER	0060	0068,0082
SOOP	009D	00A4
TBL52	00A9	005E,007E,0087,008B,008E,0095,0099,009D,00A0,00A7
TTTT	7041	005C
TXFR.C	006A	0052
WWWW	0813	0064

AUX 1443 EXERCISER
39, 52, 63 CHAR BAR FLOATING 0 REGISTRATION EXERCISER

```
028C                    ABS
                        ORG     /36                                     8AB15530
                *****************************************************   8AB15540
                *                                                       8AB15550
                *       IF THIS PROG IS TO BE USED FOR A MACHINE        8AB15560
                * WITH A DIFFERENT AREA CODE, THE LOCATION WHICH        8AB15570
                * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST      8AB15580
                * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A        8AB15590
                * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG         8AB15600
                * GENERATOR WRITE-UP FOR PROCEDURE.                     8AB15610
                *                                                       8AB15620
                *****************************************************   8AB15630
                *                                                       8AB15640
                *                                                       8AB15650
                *           1443 FLOATING 0 REGISTRATION TEST           8AB15660
                *           * WITH 39, 52 OR 63 CHAR SET                8AB15670
                *           * AND 120 OR 144                            8AB15680
                *           * PRINT POSITIONS                           8AB15690
                *           *****************                           8AB15700
                *                                                       8AB15710
                * THIS PROG CAN BE LOADED FROM CARDS OR PAPER TAPE      8AB15720
                *                                                       8AB15730
                *           CE SWITCH SETTINGS                          8AB15740
                *                                                       8AB15750
                *           XXXXXX00  NORMAL FLOAT PATTERN              8AB15760
                *           XXXXXX01  REVERSE FLOAT PATTERN             8AB15770
                *           XXXXXX11  LOCK ON LAST LINE PRINTED         8AB15780
                *           0000.111   CE SERVICE STOP                  8AB15790
                *           11111111  TERMINATE RUN                     8AB15800
                *           CCCCCC10   SELECT CHARACTER TO BE           8AB15810
                *           $*$*$*     PRINTED. THE DESIRED CHAR        8AB15820
                *           $*$*$*     IS SELECTED BY MEANS OF          8AB15830
                *           $*$*$*     THE STANDARD BCD CH CODE         8AB15840
                *           $*$*$*     AS SHOWN BELOW                   8AB15850
                *           $*$*$*                                      8AB15860
                *           $*$*$*******  1                             8AB15870
                *           $*$*$*******  2                             8AB15880
                *           $*$*$*******  4                             8AB15890
                *           $*$*$*******  8                             8AB15900
                *           $*$*$*******  A ZONE                        8AB15910
                *           $*$*$*******  B ZONE                        8AB15920
                *                                                       8AB15930
                *                                                       8AB15940
                *           EXPLANETARY NOTES                           8AB15950
                *              THE X CHAR MEANS DOES NOT MATTER         8AB15960
                *              * UNLESS THE OPERATION CODE              8AB15970
                *              * BECOMES A TERM OR CE SERV STOP         8AB15980
                *                                                       8AB15990
                *           NOTE  PRINTING OF A SPECIFIC CHAR           8AB16000
                *                 * DESTROYS RIPPLE PATTERN             8AB16010
                *                                                       8AB16020
                *                                                       8AB16030
                *                                                       8AB16040
                * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION      8AB16050
                * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.            8AB16060
                *****************************************************   8AB16070
                *                                                       8AB16080
                *           AUX PROG ENTRY POINTS                       8AB16090
                *           *********************                       8AB16100
                *                                                       8AB16110
                *           1ST PASS ENTRY                              8AB16120
                *                                                       8AB16130
                * THE NEXT EIGHT WORDS WILL NOT APPEAR IN CORE WHEN     8AB16140
                * * USING THE AUX PAPER TAPE DIAGNOSTIC LOADER          8AB16150
                *                                                       8AB16160
0036 0  1000            NOP             NO OPERATION                    8AB16170
0037 0  1000            NOP             NO OPERATION                    8AB16180
0038 0  1000            NOP             NO OPERATION                    8AB16190
```


AUX 1443 EXERCISER
39, 52, 63 CHAR BAR FLOATING 0 REGISTRATION EXERCISER

```
0039 0  1000            NOP             NO OPERATION                    8AB16210
003A 0  1000            NOP             NO OPERATION                    8AB16220
003B 0  1000            NOP             NO OPERATION                    8AB16230
003C 0  C025            LD      NN      RESTORE LOC NICE                8AB16240
003D 0  D0F7            STO     /35     * IN AUX LOADER                 8AB16250
                *                                                       8AB16260
003E 0  C01D            LD      DSW     PLACE BRANCH                    8AB16270
003F 0  D0C4            STO     /04     * TO RETUR LABEL                8AB16280
                *****************************************************   8AB16290
                *                                                       8AB16300
                *           ADD AREA CODE TO THE I/O COMMANDS           8AB16310
                *                                                       8AB16320
0040 0  6107            LDX     1 7                                     8AB16330
0041 0  C158    BUILD LD        1 CEOFF GET IOCC WORD AND               8AB16340
0042 0  E820            OR      AREA    * OR IN AREA AND                8AB16350
0043 0  D158            STO     1 CEOFF * PLACE BACK                    8AB16360
0044 0  71FE            MDX     1 -2                                    8AB16370
0045 0  70FB            MDX     BUILD                                   8AB16380
                *                                                       8AB16390
                *           ALL BUT 1ST PASS ENTRY POINT                8AB16400
                *                                                       8AB16410
0046 0  0813    RETUR XIO       CEON                                    8AB16420
0047 0  080E            XIO     SENBI   SENSE CE SW TO ACCUM            8AB16430
0048 0  E00D            AND     SENBI   BLOCK OUT PROG SEL SW           8AB16440
0049 0  D010            STO     CEON                                    8AB16450
004A 0  F00B            EOR     SENBI                                   8AB16460
004B 00 4C180064        BSC  L  NOTRD,+-  BR OUT OF PROGRAM             8AB16470
                *                                                       8AB16480
004D 0  C00C            LD      CEON                                    8AB16490
004E 0  F009            EOR     CEOFF                                   8AB16500
004F 00 4C180068        BSC  L  GSTR,+-   BR CE SERVICE STOP            8AB16510
                *                                                       8AB16520
0051 0  080A            XIO     DSW     SENSE DEVICE STATUS             8AB16530
0052 00 4C28006A        BSC  L  TXFRC,+Z  BR TRANSFER COMP INT          8AB16540
                *****************************************************   8AB16550
                *                                                       8AB16560
                *           PRINT INT ROUTINE                           8AB16570
                *           *****************                           8AB16580
                *                                                       8AB16590
0054 0  0809    PRCOM XIO       INI52   1443 INIT WRITE OP              8AB16600
0055 0  7013            MDX     SAVE2                                   8AB16610
                *****************************************************   8AB16620
                *                                                       8AB16630
                *           CONSTANTS AND/OR IOCC WORDS                 8AB16640
                *                                                       8AB16650
0056    0000            BSS  E  0                                       8AB16660
0056 0  00FF    SENBI DC        /00FF   END COMMAND COMPARE             8AB16670
0057 0  0760            DC      /0760   SENSE CE SWITCHES               8AB16680
0058 0  000F    CEOFF DC        /000F                                   8AB16690
0059 0  0000            DC      /0000   CE OFF WORD                     8AB16700
005A 0  0000    CEON  DC        /0000   CHAR WORK LOC                   8AB16710
0058 0  0001            DC      /0001   CE ON WORD                      8AB16720
005C 0  7041    DSW   DC        TTTT                                    8AB16730
005D 0  0701            DC      /0701   DSW WORD                       8AB16740
005E 0  00A9    INI52 DC        TBL52                                   8AB16750
005F 0  0500            DC      /0500   INIT WRITE                     8AB16760
0060 0  0000    SER   DC        0                                       8AB16770
0061 0  0000    SAVV  DC        0                                       8AB16780
0062 0  7007    NN    DC        NNNN                                    8AB16790
0063 0  3000    AREA  DC        /3000   1ST 1443 AREA CODE              8AB16800
                *                       * CHANGE THIS VALUE FOR A       8AB16810
                *                       * DEVICE ON ANOTHER AREA        8AB16820
                *****************************************************   8AB16830
                *                                                       8AB16840
                *           EXIT POINTS TO AUX LOADER                   8AB16850
                *           *************************                   8AB16860
                *                                                       8AB16870
                *           TERMINATE EXIT POINT                        8AB16880
```

```
                         *
0064 00 65000813         NOTRD LDX   L1 WWWW                              8AB16890
0066 0  699D                   STX    1 /04                              8AB16900
0067 0  08F0                   XIO      CEOFF                            8AB16910
                         *                                               8AB16920
                         *              CE SERVICE EXIT POINT            8AB16930
                         *                                               8AB16940
0068 0  08F3             GSTR  XIO      DSW                              8AB16950
                         *                                               8AB16960
                         *              NORMAL EXIT POINT                8AB16970
                         *                                               8AB16980
0069 0  70A3             SAVE2 MDX      QQQQ        EXIT TO AUX LOADER   8AB16990
                         ************************************************8AB17000
                         *                                               8AB17010
                         *              TRANSFER COMP INT                8AB17020
                         *              *****************                8AB17030
                         *                                               8AB17040
006A 0  188D             TXFRC SRT      13          TEST FOR PRINT       8AB17050
006B 0  D0F4                   STO      SER         * INTERRUPT LATER    8AB17060
006C 0  C0ED                   LD       CEON                             8AB17070
006D 0  1882                   SRT      2                                8AB17080
006E 0  D0EB                   STO      CEON                             8AB17090
006F 0  1010                   SLA      16                               8AB17100
0070 0  1082                   SLT      2                                8AB17110
0071 0  D001                   STO      A+1                              8AB17120
0072 00 65000000         A     LDX   L1 0                                8AB17130
0074 00 40800076               BSC   I1 GOTA        BR TO SW OPTION      8AB17140
                         *                                               8AB17150
0076 0  0098             GOTA  DC       CAME        NORMAL RIPPLE        8AB17160
0077 0  0086                   DC       REVER       REVERSE RIPPLE PATTN 8AB17170
0078 0  007A                   DC       REBIT       READ BIT SWITCHES    8AB17180
0079 0  0082                   DC       GONE        LOCK ON LAST LINE PR 8AB17190
                         ************************************************8AB17200
                         *                                               8AB17210
                         *              PRINT SW CHARACTER               8AB17220
                         *                                               8AB17230
007A 0  C0DF             REBIT LD       CEON                             8AB17240
007B 0  1008                   SLA      8                                8AB17250
007C 0  E8DD                   OR       CEON                             8AB17260
007D 0  61B8                   LDX    1 -72                              8AB17270
007E 00 D50000F2         RPT   STO   L1 TBL52+73                         8AB17280
0080 0  7101                   MDX    1 1                                8AB17290
0081 0  70FC                   MDX      RPT                              8AB17300
                         ************************************************8AB17310
                         *                                               8AB17320
                         *              LOCK ON ROUTINE                  8AB17330
                         *                                               8AB17340
0082 0  C0DD             GONE  LD       SER                              8AB17350
0083 00 4C040054               BSC   L  PRCOM,E     BR PRINT COMP INT     8AB17360
0085 0  70E3                   MDX      SAVE2                            8AB17370
                         ************************************************8AB17380
                         *                                               8AB17390
                         *              REVERSE ROUTINE                  8AB17400
                         *                                               8AB17410
0086 0  61B9             REVER LDX    1 -71                              8AB17420
0087 00 C50000F1               LD    L1 TBL52+72                         8AB17430
0089 0  D0D7                   STO      SAVV                             8AB17440
008A 0  1890                   SRT      16                               8AB17450
008B 00 C50000F2         LOOP  LD    L1 TBL52+73                         8AB17460
008D 0  18C8                   RTE      8                                8AB17470
008E 00 D50000F1               STO   L1 TBL52+72                         8AB17480
0090 0  1888                   SRT      8                                8AB17490
0091 0  7101                   MDX    1 1                                8AB17500
0092 0  70F8                   MDX      LOOP                             8AB17510
0093 0  C0CD                   LD       SAVV                             8AB17520
0094 0  18C8                   RTE      8                                8AB17530
0095 00 D40000F1               STO   L  TBL52+72                         8AB17540
0097 0  70EA                   MDX      GONE                             8AB17550
                                                                         8AB17560
```



```
                         ************************************************8AB17570
                         *                                               8AB17580
                         *              FORWARD ROUTINE                  8AB17590
                         *                                               8AB17600
0098 0  6147             CAME  LDX    1 71                               8AB17610
0099 00 C50000AA               LD    L1 TBL52+                          8AB17620
009B 0  D0C5                   STO      SAVV                             8AB17630
009C 0  1890                   SRT      16                               8AB17640
009D 00 C50000A9         SOOP  LD    L1 TBL52                           8AB17650
009F 0  18D8                   RTE      24                               8AB17660
00A0 00 D50000AA               STO   L1 TBL52+1                          8AB17670
00A2 0  1088                   SLT      8                                8AB17680
00A3 0  71FF                   MDX    1 -1                               8AB17690
00A4 0  70F8                   MDX      SOOP                             8AB17700
00A5 0  C0B8                   LD       SAVV                             8AB17710
00A6 0  1088                   SLT      8                                8AB17720
00A7 0  D002                   STO      TBL52+1                          8AB17730
00A8 0  70D9                   MDX      GONE                             8AB17740
                         ************************************************8AB17750
00A9 0  0048             TBL52 DC       72                               8AB17760
00AA 0  3838                   DC       /3838       H, H                 8AB17770
00AB 0  3838                   DC       /3838       H, H                 8AB17780
00AC 0  3838                   DC       /3838       H, H                 8AB17790
00AD 0  3838                   DC       /3838       H, H                 8AB17800
00AE 0  3838                   DC       /3838       H, H                 8AB17810
00AF 0  3838                   DC       /3838       H, H                 8AB17820
00B0 0  3838                   DC       /3838       H, H                 8AB17830
00B1 0  3838                   DC       /3838       H, H                 8AB17840
00B2 0  3838                   DC       /3838       H, H                 8AB17850
00B3 0  3838                   DC       /3838       H, H                 8AB17860
00B4 0  3838                   DC       /3838       H, H                 8AB17870
00B5 0  3838                   DC       /3838       H, H                 8AB17880
00B6 0  3838                   DC       /3838       H, H                 8AB17890
00B7 0  3838                   DC       /3838       H, H                 8AB17900
00B8 0  3838                   DC       /3838       H, H                 8AB17910
00B9 0  3838                   DC       /3838       H, H                 8AB17920
00BA 0  3838                   DC       /3838       H, H                 8AB17930
00BB 0  3838                   DC       /3838       H, H                 8AB17940
00BC 0  3838                   DC       /3838       H, H                 8AB17950
00BD 0  3838                   DC       /3838       H, H                 8AB17960
00BE 0  3838                   DC       /3838       H, H                 8AB17970
00BF 0  3838                   DC       /3838       H, H                 8AB17980
00C0 0  3838                   DC       /3838       H, H                 8AB17990
00C1 0  3838                   DC       /3838       H, H                 8AB18000
00C2 0  3838                   DC       /3838       H, H                 8AB18010
00C3 0  3838                   DC       /3838       H, H                 8AB18020
00C4 0  3838                   DC       /3838       H, H                 8AB18030
00C5 0  3838                   DC       /3838       H, H                 8AB18040
00C6 0  3838                   DC       /3838       H, H                 8AB18050
00C7 0  3838                   DC       /3838       H, H                 8AB18060
00C8 0  3838                   DC       /3838       H, H                 8AB18070
00C9 0  3838                   DC       /3838       H, H                 8AB18080
00CA 0  3838                   DC       /3838       H, H                 8AB18090
00CB 0  3838                   DC       /3838       H, H                 8AB18100
00CC 0  3826                   DC       /3826       H, O                 8AB18110
00CD 0  2626                   DC       /2626       O, O                 8AB18120
00CE 0  3838                   DC       /3838       H, H                 8AB18130
00CF 0  3838                   DC       /3838       H, H                 8AB18140
00D0 0  3838                   DC       /3838       H, H                 8AB18150
00D1 0  3838                   DC       /3838       H, H                 8AB18160
00D2 0  3838                   DC       /3838       H, H                 8AB18170
00D3 0  3838                   DC       /3838       H, H                 8AB18180
00D4 0  3838                   DC       /3838       H, H                 8AB18190
00D5 0  3838                   DC       /3838       H, H                 8AB18200
00D6 0  3838                   DC       /3838       H, H                 8AB18210
00D7 0  3838                   DC       /3838       H, H                 8AB18220
00D8 0  3838                   DC       /3838       H, H                 8AB18230
00D9 0  3838                   DC       /3838       H, H                 8AB18240
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AUX 1443 EXERCISER
39, 52, 63 CHAR BAR FLOATING 0 REGISTRATION EXERCISER

```
000A 0  3838            DC      /3838     H, H                          8AB18250
000B 0  3838            DC      /3838     H, H                          8AB18260
000C 0  3838            DC      /3838     H, H                          8AB18270
000D 0  3838            DC      /3838     H, H                          8AB18280
000E 0  3838            DC      /3838     H, H                          8AB18290
000F 0  3838            DC      /3838     H, H                          8AB18300
00E0 0  3838            DC      /3838     H, H                          8AB18310
00E1 0  3838            DC      /3838     H, H                          8AB18320
00E2 0  3838            DC      /3838     H, H                          8AB18330
00E3 0  3838            DC      /3838     H, H                          8AB18340
00E4 0  3838            DC      /3838     H, H                          8AB18350
00E5 0  3838            DC      /3838     H, H                          8AB18360
00E6 0  3838            DC      /3838     H, H                          8AB18370
00E7 0  3838            DC      /3838     H, H                          8AB18380
00E8 0  3838            DC      /3838     H, H                          8AB18390
00E9 0  3838            DC      /3838     H, H                          8AB18400
00EA 0  3838            DC      /3838     H, H                          8AB18410
00EB 0  3838            DC      /3838     H, H                          8AB18420
00EC 0  3838            DC      /3838     H, H                          8AB18430
00ED 0  3838            DC      /3838     H, H                          8AB18440
00EE 0  3838            DC      /3838     H, H                          8AB18450
00EF 0  3838            DC      /3838     H, H                          8AB18460
00F0 0  3826            DC      /3826     H, 0                          8AB18470
00F1 0  2626            DC      /2626     0, 0                          8AB18480
                  *                                                     8AB18490
000D              QQQQ  EQU     /D        GO TO LOADER AT /D            8AB18500
7007              NNNN  EQU     /7007     FOR CARD LOADER AT /35        8AB18510
0813              WWWW  EQU     /0813     SET IN LOADER AT /04          8AB18520
7041              TTTT  EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO    8AB18530
                  *                       THE BRANCH FROM THE LOADER    8AB18540
                  *                       TO RETUR IN THIS PROGRAM.     8AB18550
                  ********************************************          8AB18560
00F2    00F1            END     *-1       END CARD NEVER USED           8AB18570
```


AUX 1443 EXERCISER
39, 52, 63 CHAR BAR FLOATING 0 REGISTRATION EXERCISER

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
A	0072	0071
AREA	0053	0042
BUILD	0041	0045
CAME	0098	0076
CEOFF	0058	0041,0043,004E,0067
CEON	005A	0046,0049,004D,006C,006E,007A,007C
DSW	005C	003E,0051,0068
GONE	0082	0079,0097,00A8
GOTA	0076	0074
GSTR	0068	004F
INIS.	005E	0054
LOOP	008B	0092
NN	0062	003C
NNNN	70D7	0062
NJTRD	0064	0048
PRCOM	0054	0083
QQQQ	000D	0069
REBIT	007A	0078
RETUR	0046	00F2
REVER	0086	0077
RPT	007E	0081
SAVE2	0069	0055,0085
SAVV	0061	0089,0093,009B,00A5
SENBT	0056	0047,0048,004A
SER	0060	0068,0082
SOOP	009D	00A4
TBL52	00A9	005E,007E,0087,008B,008E,0095,0099,009D,00A0,00A7
TTTT	7041	005C
TXFRC	006A	0052
WWWW	0813	0064

TABLE OF CONTENTS

1. PURPOSE

THE PURPOSE OF THE AUX PROGRAM GENERATOR UTILITY PROGRAM IS TO SUPPLY THE NECESSARY EDIT AND PUNCH PROGRAMS FOR THE C.E. TO CHANGE (MODIFY) AN EXISTING AUX PROGRAM DECK (7 CARDS). THE AUX PROGRAM GENERATOR UTILITY PROGRAM CONSISTS OF THE FOLLOWING PROGRAMS ENTITLED-

A. 7 CARD EDIT AND PUNCH (USES ENTIRE 1800 SYSTEM)
B. AUX 1 CARD EDIT AND PUNCH (USES AUX STORAGE)
C. AUX (DEVICE) SKELETON PROGRAMS.

1.1 PURPOSE - 7 CARD EDIT AND PUNCH PROGRAM

THE PURPOSE OF THIS PROGRAM IS TO ENABLE THE CUSTOMER ENGINEER TO PUNCH A NEW 7 CARD AUX PROGRAM DECK WITH DESIRED PROGRAM CHANGES. THIS PROGRAM SHOULD BE USED WHEN THE 1800 SYSTEM IS INSTALLED TO ADAPT EXISTING AUX PROGRAMS FOR I/O DEVICES EMPLOYING CUSTOMER ASSIGNED AREA CODES.

1.2 PURPOSE - AUX 1 CARD EDIT AND PUNCH.

THE PURPOSE OF THIS AUX PROGRAM IS TO ENABLE THE CUSTOMER ENGINEER TO PUNCH ONE NEW CARD OF A 7 CARD AUX PROGRAM DECK WITH DESIRED PROGRAM CHANGES. BY MEANS OF THIS PROGRAM IT IS POSSIBLE TO OBTAIN A NEW 7 CARD AUX PROGRAM DECK BY MAKING 7 SEPERATE PASSES.

1.3 PURPOSE - AUX DEVICE SKELETON PROGRAMS.

THE PURPOSE OF THESE PROGRAMS ARE TO PROVIDE A BASE (TAILORED TO VARIOUS DEVICES) UPON WHICH THE CE MAY WRITE HIS OWN AUX PROGRAMS. (THE AUX 1 CARD EDIT AND PUNCH PROGRAM ALLOWS THE CE TO MAKE CHANGES TO AN EXISTING AUX PROGRAM WHILE THE CUSTOMERS PROGRAM IS OPERATING IN MAIN CORE STORAGE.)

2. PREREQUISITES

2.1 SEPARATE CARD DECKS

THE CARD DECK SUPPLIED WITH THIS DOCUMENT CONTAINS 15 OBJECT DECKS. EACH OBJECT DECK IN THE SUPPLIED CARD DECK IS SEPARATED BY A BLANK CARD. UPON RECEIPT, SEPARATE AND IDENTIFY THE DECKS AS FOLLOWS,

A. STARTING AT THE FRONT OF THE CARD DECK REMOVE THE FIRST 16 CARDS FROM THE DECK AND OBSERVE THAT THE LAST CARD REMOVED WAS A BLANK CARD. PLACE A RUBBER BAND AROUND THESE CARD AND IDENTIFY THE CARDS WITH THE NAME

AUX PROG. GEN. UTIL. - 7 CARD EDIT AND PUNCH

B. CONTINUE THE SEPARATION PROCESS BY REMOVING THE NEXT 10 CARDS AND AGAIN OBSERVE THAT THE LAST CARD REMOVED WAS A BLANK CARD. IDENTIFY THESE CARDS WITH THE NAME

AUX PROG. GEN. UTIL. - AUX 1 CARD EDIT AND PUNCH

C. SEPARATE AND IDENTIFY THE REMAINING DECKS BY REMOVING 8 CARDS EACH TIME WHILE AGAIN OBSERVING THAT THE LAST CARD REMOVED FOR EACH GROUP IS A BLANK CARD. THE NAMES OF THE REMAINING DECKS ACCORDING TO THEIR ORDER IN THE CARD DECK ARE AS FOLLOWS,

AUX PROG. GEN. UTIL.-AUX PROCESSORS
AUX PROG. GEN. UTIL.-AUX 1ST 1053 SKELETON PROG.
AUX PROG. GEN. UTIL.-AUX 2ND 1053 SKELETON PROG.
AUX PROG. GEN. UTIL.-AUX 3RD 1053 SKELETON PROG.
AUX PROG. GEN. UTIL.-AUX 4TH 1053 SKELETON PROG.
AUX PROG. GEN. UTIL.-AUX 1054/55 SKELETON PROG.
AUX PROG. GEN. UTIL.-AUX 1442 SKELETON PROG.
AUX PROG. GEN. UTIL.-AUX 1443 SKELETON PROG.
AUX PROG. GEN. UTIL.-AUX 1627 SKELETON PROG.
AUX PROG. GEN. UTIL.-AUX 1816 SKELETON PROG.
AUX PROG. GEN. UTIL.-AUX 1ST 2310 SKELETON PROG.
AUX PROG. GEN. UTIL.-AUX 2ND 2310 SKELETON PROG.
AUX PROG. GEN. UTIL.-AUX 3RD 2310 SKELETON PROG.

2.2 PROGRAM REQUIREMENTS - 7 CARD EDIT AND PUNCH.

THE ENTIRE 1800 DATA ACQUISITION AND CONTROL SYSTEM IS REQUIRED AND THE SYSTEM MUST BE EQUIPPED WITH A 1442 CARD READ/PUNCH.

NOTE

IF THE 1442 USES A CUSTOMER ASSIGNED AREA CODE A HEX CORRECTION CARD MUST BE MADE UP ACCORDING TO THE STANDARD FORMAT SHOWN IN SECTION 3.2.1. THE CORE LOCATION REFERRED TO AS AREA IN THIS PROGRAM LISTING MUST BE CHANGED TO THE CUSTOMER ASSIGNED 1442 AREA CODE. THE CORRECTION CARD CONTAINING THIS CHANGE MUST BE INSERTED PRIOR TO THE 7 CARD EDIT AND PUNCH PROGRAM END CARD.

2.3 PROGRAM REQUIREMENTS - AUX 1 CARD EDIT AND PUNCH

THE AUX DIAGNOSTIC LOADER MUST BE IN AUXILIARY - STORAGE BEFORE THE AUX 1 CARD EDIT AND PUNCH PROGRAM CAN BE LOADED. IN ADDITION, A PROGRAM MUST BE IN MAIN-CORE RUNNING OR AT A WAIT INSTRUCTION READY TO START RUNNING.

3. USE PROCEDURE

3A. USE PROCEDURE - 7 CARD EDIT AND PUNCH

3.1 CALCULATE THE CHANGES TO BE MADE FOR A PARTICULAR AREA CODE.

A. OBTAIN LISTING OF PROGRAM TO BE EDITED.
B. IN THE SYMBOL TABLE OF THE LISTING, LOCATE THE LABEL 'AREA'.
C. WRITE DOWN ALL THE LOCATIONS REFERENCED BY THE LABEL 'AREA'. AND PREPARE A HEX PATCH CARD. (REFER TO 3.2.1 - A-4). THIS COULD ALSO BE CHANGED BY THE AUX 1 CARD EDIT PORTION OF THIS PROGRAM (REFER SECTION 3B). IF AREA IS AN EQU STATEMENT PROCEDE TO STEP D.

D. LOCATE ALL THE LOCATIONS IN THE LISTING THAT ARE REFERENCED BY THE LABEL ''AREA''.
E. PROCEED AS FOLLOWS-

EXAMPLE

ASSUME THE FOLLOWING CONDITIONS-

OLD AREA CODE = 1800 (AREA 3),
NEW AREA CODE = 2000 (AREA 4),
LOCATION(S) REFERENCED = 0085, ETC.,
CONTENTS OF REFERENCED LOCATION(S) = 1F00, ETC.,

1. SUBTRACT OLD AREA CODE FROM THE CONTENTS OF EACH REFERENCED LOCATION (E.G., 1F00-1800 = 0700).
2. ADD NEW AREA CODE TO THE DIFFERENCE OBTAINED IN STEP 1. (E.G., 0700 + 2000 = 2700).

F. CALCULATE CHANGES FOR EACH LOCATION TO BE CHANGED AS SHOWN IN THE ABOVE EXAMPLE.

3.2 EDIT THE EXISTING PROGRAM AS FOLLOWS-

THE FOLLOWING STEPS OUTLINE THE EDITING PROCEDURE. DO NOT ALTER EXISTING AUX OBJECT DECK (BY MEANS OF A KEYPUNCH) AS THE CHECK-SUM ROUTINE IN THIS PROGRAM WILL PREVENT THE CARDS FROM LOADING.

3.2.1 PREPARING CARD DECK

A. OBTAIN THE FOLLOWING DECKS AND CARDS-

1. CYCLE-STEAL LOADER DECK. (PID 0881).
2. THE 7 CARD EDIT AND PUNCH PROGRAM DECK. ENSURE THAT THE BLANK END CARD HAS BEEN REMOVED.
3. AUX OBJECT DECK TO BE EDITED. ENSURE THAT THE BLANK END CARD HAS BEEN REMOVED AND THAT THE 7 CARDS OF THE PROGRAM TO BE EDITED ARE IN CORRECT ORDER.

4. PREPARE THE CORRECTION OVERLAY CARDS AS FOLLOWS-

COLUMN	FIELD DESCRIPTION
1	12 PUNCH
2 THRU 5	ADDRESS WHERE FIRST CORRECTION IS TO BE PLACED
6	BLANK
7 THRU 10	FIRST CORRECTION WORD
11	BLANK
12 THRU 15	SECOND CORRECTION WORD
16	BLANK
17 AND ON	UP TO 15 CORRECTION WORDS CAN BE PUNCHED IN ONE CARD. ENTER CORRECTION WORDS AT SUCCESSIVELY HIGHER ADDRESSES FOLLOWING THE FIRST CORRECTION-WORD ADDRESS.

NOTE

ALTHOUGH HEXADECIMAL-FORMAT CORRECTION CARDS ARE NORMALLY USED, THE CORRECTION CARDS CAN ALSO BE PUNCHED IN STANDARD 12-4 BINARY FORMAT.

5. NINE OR MORE BLANK CARDS.

B. COMPILE THE CARDS SPECIFIED IN STEP A INTO A DECK, ORGANIZING THE CARDS AND DECKS IN THE ORDER THAT THEY ARE LISTED IN STEP A.

3.2.2 LOADING AND PUNCHING

LOADING AND PUNCHING IS ACCOMPLISHED IN ONE CONTINUOUS OPERATION. PROCEED AS FOLLOWS-

A. DEPRESS NPRO PUSHBUTTON OF 1442 TO EJECT ANY CARDS LEFT IN THE MACHINE.
B. PLACE CARD DECK COMPILED IN PARAGRAPH 3.2.1 INTO THE HOPPER OF THE 1442.
C. PRESS 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
D. TURN OFF (DOWN) AT LEAST ONE SENSE/PROGRAM SWITCH OF 1800 P-C CONSOLE.
E. PRESS RESET PUSHBUTTON AND THEN THE PROG LOAD PUSHBUTTON OF THE 1800 P-C CONSOLE. THE 1442 SHOULD BEGIN TO READ CARDS. CARD PUNCHING SHOULD COMMENCE WHEN THE BLANK CARDS REACH THE PUNCH STATION OF THE 1442.

3.3 EDITING AN EXISTING AUX DIAGNOSTIC LOADER

THE FOLLOWING STEPS OUTLINE THE EDITING PROCEDURE. DO NOT ALTER THE EXISTING AUX OBJECT DECK (BY MEANS OF A KEYPUNCH) AS THE CHECK-SUM ROUTINE IN THIS PROGRAM WILL PREVENT THE CARDS FROM LOADING.

3.3.1 PREPARING CARD DECK

OBTAIN THE FOLLOWING DECKS

1. CYCLE-STEAL LOADER DECK (PID 0881) MUST BE IN AUX STORAGE.
2. THE 7 CARD EDIT AND PUNCH PROGRAM DECK. INSURE THAT THE BLANK END CARD HAS BEEN REMOVED.
3. THE AUX DIAGNOSTIC LOADER. INSURE THAT THE BLANK END CARD HAS BEEN REMOVED AND THAT THE FOUR CARDS OF THE LOADER ARE IN CORRECT ORDER.

4. PREPAKE THE CORRECTION OVERLAY CARDS AS FOLLOWS-

COLUMN	FIELD DESCRIPTION
1	12 PUNCH PLUS ONE OF THE FOLLOWING- A. 11 PUNCH WHEN EDITING FIRST BOOTSTRAP CARD. B. 0 PUNCH WHEN EDITING SECOND BOOTSTRAP CARD. C. 1 PUNCH WHEN EDITING CARDS CONTAINING THE ACTUAL AUX LOADER.
2 THRU 5	ADDRESS WHERE FIRST CORRECTION IS TO BE PLACED
6	BLANK
7 THRU 10	FIRST CORRECTION WORD
11	BLANK
12 THRU 15	SECOND CORRECTION WORD
16	BLANK
17 AND ON	UP TO 15 CORRECTION WORDS CAN BE PUNCHED IN ONE CARD. ENTER CORRECTION WORDS AT SUCCESSIVELY HIGHER ADDRESSES FOLLOWING THE FIRST CORRECTION-WORD ADDRESS.

5. SIX OR MORE BLANK CARDS.

B. COMPILE THE CARDS SPECIFIED IN STEP A INTO A DECK, ORGANIZING THE CARDS AND DECKS IN THE ORDER THAT THEY ARE LISTED IN STEP A. THE FIRST CARD OF THE CYCLE-STEAL LOADER DECK IS THE FIRST CARD TO BE LOADED.

3.3.2 LOADING AND PUNCHING

LOADING AND PUNCHING ARE ACCOMPLISHED IN ONE CONTINUOUS OPERATION. PROCEED AS FOLLOWS-

A. DEPRESS NPRO PUSHBUTTON TO EJECT ANY CARDS LEFT IN THE MACHINE.
B. PLACE CARD DECK COMPILED IN PARAGRAPH 3.3.1 INTO THE HOPPER OF THE 1442.
C. PRESS 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
D. TURN ON (UP) ALL EIGHT SENSE/PROGRAM SWITCHES OF 1800 P-C CONSOLE CONSOLE.
F. PRESS RESET PUSHBUTTON AND THEN THE PROG LOAD PUSHBUTTON OF THE 1800 P-C CONSOLE. THE 1442 SHOULD BEGIN TO READ CARDS. CARD PUNCHING SHOULD COMMENCE WHEN THE BLANK CARDS REACH THE PUNCH STATION OF THE 1442.
F. LABEL THE NEW AUX PROGRAM DECK FOR FUTURE IDENTIFICATION.

3.4 POSSIBLE ERRORS

IF THE EDITING AND PUNCHING PROGRAM FAILS TO PUNCH THE REQUIRED NUMBER OF CARDS, TWO ERRORS MAY HAVE OCCURRED.

A. THE 8-8 OBJECT DECK FAILED TO READ IN CORRECTLY, CAUSING THE PROGRAM TO STOP AT A WAIT INSTRUCTION. THE ERROR MAY HAVE BEEN CAUSED BY ENTERING CORRECTIONS DIRECTLY INTO THE 8-8 OBJECT DECK.
B. THE PROGRAM LOOPS, CONTINUOUSLY TESTING FOR A 1442-READY INDICATION.

3B. USE PROCEDURE - AUX 1 CARD EDIT AND PUNCH

3.1 EDITING AN EXISTING AUXILIARY-STORAGE DIAGNOSTIC PROGRAM
THE FOLLOWING STEPS OUTLINES THE EDITING PROCEDURE. DO NOT ALTER ANY OF THE 7 AUX PROGRAM CARDS BY MEANS OF A KEYPUNCH AS THE CHECK-SUM ROUTINE IN THIS PROGRAM WILL PREVENT THE CARDS FROM LOADING.

3.2 PREPARE CARD DECK

A. OBTAIN THE FOLLOWING DECKS AND CARDS.

1. AUX DIAGNOSTIC LOADER (PID 08A1) MUST BE IN AUX STORAGE.
2. THIS AUX PROGRAMS FIRST 7 CARDS. (THIS IS ESSENTIALLY A 9 CARD AUX PROGRAM, WHERE THE LAST TWO CARDS ARE ENTERED AS SPECIFIED IN PART 6.)
3. ONE OF THE 7 AUX PROGRAM CARDS BEING CHANGED
4. HEX CORRECTION CARDS (STANDARD FORMAT)
THESE CARDS MUST ADHERE TO THE FOLLOWING FORMAT

COL.	FIELD DESCRIPTION
1	12 PUNCH
2-5	ADDRESS WHERE 1ST CORRECTION GOES
6	BLANK
7-10	FIRST CORRECTION WORD
11	BLANK
12-15	SECOND CORRECTION WORD
16	BLANK
ETC.	UP TO 14 CORRECTION WORDS CAN BE PUNCHED IN ONE CARD. CORRECTION WORDS ARE ENTERED AT SUCCESIVELY HIGHER ADDRESSES FOLLOWING THE 1ST CORRECTION WORD ADDRESS

5. ONE BLANK CARD.
6. CARDS NUMBERED 6 AND 7 OF THIS AUX PROGRAM.
7. THREE OR MORE BLANK CARDS.

B. COMPILE THE CARDS SPECIFIED IN STEP A INTO A DECK, ORGANIZING THE CARDS AND DECKS IN THE ORDER THAT THEY ARE LISTED IN STEP A.

3.3 LOADING AND PUNCHING

--CAUTION--

DO NOT ATTEMPT TO LOAD THIS PROGRAM IF THE CARD READER SHARES A CHANNEL WITH ANOTHER DEVICE WHILE THAT DEVICE IS OPERATING.

LOADING AND PUNCHING IS ACCOMPLISHED IN ONE CONTINUOUS OPERATION.

NOTE

THE AUX DIAGNOSTIC LOADER MUST BE PRESENT IN AUX CORE STORAGE AND A PROGRAM MUST BE IN MAIN CORE RUNNING OR AT A WAIT INSTRUCTION READY TO START RUNNING.

PROCEED AS FOLLOWS,

A. BE SURE THE 1442 IS AVAILABLE AND ALL CARDS ARE REMOVED.
B. ON THE CE PANEL SET THE INTERRUPT SWITCH TO AUX INTERRUPT AND ALL THE CE SWITCHES TO THEIR ON POSITION (UP).
C. DEPRESS CE INTERRUPT TWO TIMES TO ASSURE THE 1442 IS IN CE MODE.
D. PLACE THE CARDS PREPARED IN SECTION 3.2 IN THE HOPPER OF THE 1442.
E. DEPRESS THE 1442 START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.
F. DEPRESS THE CE LEVEL INTERRUPT PUSHBUTTON (ON CE PANEL) TO LOAD THE PROGRAM. IF EVERYTHING WORKS CORRECTLY A NEW AUX PROGRAM CARD WILL BE PUNCHED AND THE AUX 1 CARD EDIT AND PUNCH PROGRAM WILL BE TERMINATED AUTOMATICALLY. THIS MEANS THAT THE AUX LOADER WILL BE READY TO READ IN A NEW AUX PROGRAM.

G. IF THE PREPARED CARD DECK DID NOT LOAD AND PUNCH, ONE OF THE FOLLOWING THINGS MAY HAVE OCCURRED,

1. THE AUX LOADER MAY HAVE REJECTED ANY ONE OF THE FIRST 7 CARDS DUE TO THE CHECK-SUM ROUTINE OF THE LOADER. CHECK FOR PROPER CARD SEQUENCE.
2. THE PARTICULAR AUX CARD BEING EDITED MAY HAVE BEEN REJECTED DUE TO THE CHECK-SUM ROUTINE LOCATED IN THE AUX 1 CARD EDIT AND PUNCH PROGRAM. REJECTION OF THIS CARD WILL RESULT IF CORRECTIONS ARE PLACED DIRECTLY INTO THE CARD (BY MEANS OF A KEYPUNCH).
3. THE INFORMATION CONTAINED IN THE HEX CORRECTION CARDS MAY BE OUTSIDE THE PERMISSIBLE RANGE FOR THE PARTICULAR AUX CARD BEING EDITED. THE TABLE BELOW INDICATES THE ALLOWABLE RANGE OF CORRECTION CARD ADDRESSES FOR EACH OF THE 7 AUX PROGRAM CARDS,

AUX CARD NUMBER	RANGE OF ALLOWABLE CORRECTION ADDRESS
X	0036 THRU 0050
0	0051 THRU 006B
1	006C THRU 0086
2	0087 THRU 00A1
3	00A2 THRU 00BC
4	00BD THRU 00D7
5	00D8 THRU 00FD

4. CARDS NUMBERS 6 AND 7 OF THE AUX 1 CARD EDIT AND PUNCH PROGRAM MAY BE OUT OF SEQUENCE.

NOTE

REGARDLESS OF THE PROBLEM THAT MAY HAVE PROHIBITED THE PUNCHING OF A NEW AUX CARD THE AUX LOADER WILL BE READY TO READ IN A NEW AUX PROGRAM. TO TRY AGAIN RETURN TO STEP A.

3.4 TERMINATING PROCEDURE

THERE IS NO TERMINATION PROCEDURE NECESSARY AFTER OPERATING THIS PROGRAM. TO OFFSET THE POSSIBILITY THAT THE 1442 MIGHT BE MALFUNCTIONING THE NEXT TIME THE 1800 SYSTEM IS SERVICED, IT IS SUGGESTED THAT THE AUX 1442 PACKED READ DIAGNOSTIC PROGRAM BE LOADED INTO AUXILIARY STORAGE AT THE CONCLUSION OF EACH SERVICE CALL. REFER TO DOCUMENTATION FOR AUX 1442 PACKED READ DIAGNOSTIC PROGRAM FOR LOADING PROCEDURES.

3C. USE PROCEDURE - AUX (DEVICE) SKELETON PROGRAMS.

THIS GROUP OF PROGRAMS CONTAINS THE BASIC PROGRAMMING INSTRUCTIONS NECESSARY TO INTERFACE WITH THE AUX DIAGNOSTIC LOADER. THE AUX SKELETON PROGRAM PERTAINING TO A PARTICULAR DEVICE SHOULD BE USED WHEN WRITING AN AUX PROGRAM FOR THAT DEVICE. THE LISTINGS FOR THE AUX SKELETON PROGRAMS CONTAIN MANY COMMENTS DESIGNED TO AID THE CE IN HIS PROGRAMMING EFFORT. IT IS IMPORTANT THAT THESE COMMENTS ARE READ AND FOLLOWED AS FAILURE TO DO SO MAY ADVERSELY AFFECT CUSTOMER OPERATION. ADHERENCE TO THE FOLLOWING WORDS OF CAUTION SHOULD GREATLY INCREASE YOUR CHANCE OF PROGRAMMING SUCCESS.

A. ALTER ONLY WORDS IN THE AUX SKELETON PROGRAMS LOCATED AT 0061 THRU 00FD
B. ALWAYS EXIT TO CUSTOMERS PROGRAM BY BRANCHING TO THE LOCATION CALLED *SAVE 2*.
C. DO NOT CONSTRUCT ANY TIGHT MEMORY LOOPS IN AUX STORAGE AS THIS WILL BLOCK OPERATION OF THE CUSTOMERS MAINLINE PROGRAM.

4. PRINTOUTS (NOT APPLICABLE)

5. COMMENTS (NOT APPLICABLE)

6. APPENDIX (NONE)

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028C                    ABS
                        ORG     3300                                    8AC00000
                *                                                       8AC00010
                ********************************************************8AC00020
0CE4 0  1000    AREA    DC      /1000       1ST 1442 AREA CODE          8AC00030
                *         IF THIS PROG IS TO BE USED FOR A MACHINE      8AC00040
                * WITH A DIFF AREA CODE THE CONTENTS AT THE LOCATN       8AC00050
                * REFERRED TO AS AREA MUST BE CHANGED BY A              8AC00060
                * STANDARD HEX CARD OVERLAY INSERTED PRIOR TO THIS      8AC00070
                * PROGRAMS 12-4 OBJECT DECKS END CARD                   8AC00080
                ********************************************************8AC00090
                *                                                       8AC00100
                *                                                       8AC00110
                *         7 CARD EDIT AND PUNCH                         8AC00120
                *         *********************                         8AC00130
                *                                                       8AC00140
                *                                                       8AC00150
                * THIS PROG IS OPERATED IN MAIN CORE AND REQUIRES       8AC00160
                * * THE ENTIRE 1800 SYSTEM                              8AC00170
                *                                                       8AC00180
                *                                                       8AC00190
                *                                                       8AC00200
                * PURPOSE                                               8AC00210
                *    THIS PROGRAM ALLOWS THE CE TO MAKE CHANGES TO      8AC00220
                * AN EXISTING AUX 8-8 CARD DECK BY MEANS OF CARD        8AC00230
                * OVERLAYS, AND OBTAIN A NEW AUX 8-8 DECK (7 CARDS)     8AC00240
                *                                                       8AC00250
                *                                                       8AC00260
                * OPERATING INSTRUCTIONS TO CONVERT AN EXISTING         8AC00270
                * * AUX 8-8 PROG CARD DECK                              8AC00280
                *    MAKE SURE THAT AT LEAST ONE OF THE EIGHT           8AC00290
                *    * CONSOLE PROG AND SENSE SWITCHES ARE OFF          8AC00300
                *    LOAD CARD DECK ASSEMBLED IN ORDER SHOWN BELOW      8AC00310
                *                                                       8AC00320
                *     1. CYCLE STEAL LOADER                             8AC00330
                *     2. THIS PROGRAMS 12-4 OBJECT DECK                 8AC00340
                *     3. THE AUX 8-8 OBJECT DECK OF AUX PROG TO BE      8AC00350
                *        * MODIFIED (7 CARDS IN CORRECT ORDER)          8AC00360
                *     4. HEX OVERLAY CARDS (STANDARD FORMAT.            8AC00370
                *           THESE CARDS MUST ADHERE TO THE FOLLOWNG     8AC00380
                *        FORMAT                                         8AC00390
                *                                                       8AC00400
                *           COL.          FIELD DESCRIPTION             8AC00410
                *           1               12 PUNCH                    8AC00420
                *           2-5     ADDRESS WHERE 1ST CORRECTION GOES   8AC00430
                *           6               BLANK                       8AC00440
                *           7-10        FIRST CORRECTION WORD           8AC00450
                *           11              BLANK                       8AC00460
                *           12-15       SECOND CORRECTION WORD          8AC00470
                *           16              BLANK                       8AC00480
                *           ETC.    UP TO 15 CORRECTION WORDS CAN BE    8AC00490
                *                   PUNCHED IN ONE CARD. CORRECTION     8AC00500
                *                   WORDS ARE ENTERED AT SUCCESIVELY    8AC00510
                *                   HIGHER ADDRESSES FOLLOWING THE      8AC00520
                *                   1ST CORRECTION WORDS ADDRESS.       8AC00530
                *     5. BLANK CARDS                                    8AC00540
                *                                                       8AC00550
                *                                                       8AC00560
                * OPERATING INSTRUCTIONS TO CONVERT AN EXISTING         8AC00570
                * * AUX 8-8 LOADER CARD DECK                            8AC00580
                *    MAKE SURE THAT ALL OF THE EIGHT                    8AC00590
                *    * CONSOLE PROG AND SENSE SWITCHES ARE ON           8AC00600
                *       THE METHOD TO BE FOLLOWED IS IDENTICAL          8AC00610
                *    TO THE AUX 8-8 PROG CONVERTION PROCEDURE           8AC00620
                *    EXCEPT THAT AN ADDITIONAL PUNCH MUST BE            8AC00630
                *    PLACED IN COL 1 OF HEX OVEPLAY CARDS AS            8AC00640
                *    * SHOWN BELOW                                      8AC00650
                *          X PUNCH     CORRECTION FOR 1ST               8AC00660
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                *                                                       8AC00670
                *                                                       8AC00680
                *           0 PUNCH     * BOOTSTRAP CARD              8AC00690
                *                       CORRECTION FOR 2ND            8AC00700
                *                       * BOOTSTRAP CARD              8AC00710
                *           1 PUNCH     CORRECTION FOR ACTUAL         8AC00720
                *                       * AUX LOADER CARDS            8AC00730
                *                                                     8AC00740
                * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION      8AC00750
                * = REFER TO THE PROGRAM DESCRIPTION WRITE-UP.          8AC00760
                *                 ************************************* 8AC00770
0CE5 0  FFFF    FFFF    DC      /FFFF                                   8AC00780
0CE6 0  0001    ADD     DC      /0001                                   8AC00790
0CE7 0  8000    NUMBE   DC      /8000                                   8AC00800
0CE8 0  0080    EOR     DC      /0080                                   8AC00810
0CE9 0  0008    TWELV   DC      8           TERMINATOR FOR CARD PUNCH   8AC00820
0CEA 0  0000    X38     DC      0                                       8AC00830
0CEB 0  0000    X39     DC      0                                       8AC00840
0CEC 0  0000    PUN     DC      0           LOC OF DATA TO BE PUNCHED   8AC00850
                *       DC      0           * PLACED HERE               8AC00860
0CEE    0000            BSS     E 0                                     8AC00870
0CEE 0  0000    SENBI   DC      0                                       8AC00880
0CEF 0  0760            DC      /0760       SENSE SENSE SWITCHES        8AC00890
0CF0 0  0336    PUNCH   DC      /0336       ALL CARDS PUNCHED FROM      8AC00900
                *                           * THIS ADDR                 8AC00910
0CF1 0  0501            DC      /0501                                   8AC00920
0CF2 0  1802    CEOFF   DC      /1802                                   8AC00930
                ********************************************************8AC00940
0CF3 00 C4000D85 MOO    LD      L BITS                                  8AC00950
0CF5 00 4C200D07        BSC     L AUXX,Z    BR AUX PROGRAM              8AC00960
                *                   PUNCH AUX 8-8 LOADER PROGRAM DECK   8AC00970
0CF7 00 4C000EC2        BSC     L BOOT                                  8AC00980
0CF9 0  0EEF    LO      DC      LOAD                                    8AC00990
0CFA 0  C0FE    BOO     LD      LO                                      8AC01000
0CFB 00 D4000EEE        STO     L ABQ+1                                 8AC01010
0CFD 00 65001000        LDX     L1 /1000                                8AC01020
0CFF 00 6D000CE8        STX     L1 EOR                                  8AC01030
0D01 00 0C000E8E MOR    XIO     L DSWOQ     SENSF DEVICE STATUS         8AC01040
0D03 00 4C040D01        BSC     L MOR,E     BR READER NOT READY         8AC01050
0D05 00 4C000EC6        BSC     L LA                                    8AC01060
                ********************************************************8AC01070
                *                                                       8AC01080
                *                                                       8AC01090
                *           AUX PROGRAM PUNCH ROUTINE                   8AC01100
                *                                                       8AC01110
0D07 00 65000536 AUXX   LDX     L1 /0536    SET LOCATION OF LOADED      8AC01120
0D09 0  69E2            STX     1 PUN       * AUX PROG IN PUN           8AC01130
                *                                                       8AC01140
0D0A 0  6126    MORE    LDX     1 38        SAVE LOCATIONS              8AC01150
0D0B 0  C0E0            LD      PUN         * WHERE HASH                8AC01160
0D0C 0  D002            STO     SAV+1       * AND ID NUMBER             8AC01170
0D0D 0  D005            STO     SAVE+1      * WILL BE STORED            8AC01180
0D0E 00 C5000000 SAV    LD      L1 0        *                           8AC01190
0D10 0  0009            STO     X38         *                           8AC01200
0D11 0  6127            LDX     1 39        *                           8AC01210
0D12 00 C5000000 SAVE   LD      L1 0        *                           8AC01220
0D14 0  0006            STO     X39         *                           8AC01230
0D15 0  6125            LDX     1 37                                    8AC01240
0D16 0  C0D5            LD      PUN                                     8AC01250
0D17 0  D013            STO     NUM+1                                   8AC01260
0D18 0  D005            STO     CHECK+1                                 8AC01270
0D19 0  D008            STO     HASH+1                                  8AC01280
0D1A 0  C0D7            LD      CEOFF       LOAD UNIQUE                 8AC01290
0D1B 0  1802            SPA     2           * CARD                      8AC01300
0D1C 0  D0D5            STO     CEOFF       * ID NUMBER                 8AC01310
0D1D 00 85000000 CHECK  A       L1 0                                    8AC01320
0D1F 0  71FF            MDX     1 -1                                    8AC01330
0D20 0  70FC            MDX     CHECK                                   8AC01340
0D21 0  F0C3            EOR     FFFF                                    8AC01350
0D22 0  80C3            A       ADD
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AUX PROGRAM GENERATOR UTILITY PROGRAM
7 CARD EDIT

```
0023 0  6126              LDX   1 38                                  8AC01360
0024 00 D5000000    HASH  STO   L1 0          PLACE HASH TOTAL        8AC01370
0026 0  6127              LDX   1 39                                  8AC01380
0027 0  C0BF              LD      NUMBE                               8AC01390
0028 0  1801              SRA     1                                   8AC01400
0029 0  D0BD              STO     NUMBE                               8AC01410
002A 00 D5000000    NUM   STO   L1 0          PLACE CARD NUMBER       8AC01420
002C 0  F0BB              EOR     EOR                                 8AC01430
002D 00 4C180D5B          BSC   L  WAIT,+-    BR 7 CARDS PUNCHED      8AC01440
002F 0  6129              LDX   1 40          COUNTER                 8AC01450
0030 0  620C              LDX   2 0                                   8AC01460
0031 00 67000335          LDX   L3 /335       PUNCH TABLE ADDR AT /336 8AC01470
0033 0  C0B8              LD      PUN                                 8AC01480
0034 0  D003              STO     SPLA+1                              8AC01490
0035 0  10A0        NIG   SLT     32                                  8AC01500
0036 0  7301              MDX   3 1                                   8AC01510
0037 00 C6000000    SPLA  LD    L2 0          OBTAIN DATA FROM CARD READ 8AC01520
0039 0  18D8              RTE     24                                  8AC01530
003A 00 D7000000          STO   L3 0          STORE IN PUNCH TABLE    8AC01540
003C 0  7301              MDX   3 1                                   8AC01550
003D 0  1098              SLT     24                                  8AC01560
003E 00 D7000000          STO   L3 0          STORE IN PUNCH TABLE    8AC01570
0040 0  7201              MDX   2 1                                   8AC01580
0041 0  71FF              MDX   1 -1                                  8AC01590
0042 0  70F2              MDX     NIG                                 8AC01600
0043 00 C4000385          LD    L /385        PLACE PUNCH TERMINATOR  8AC01610
0045 0  E8A3              OR      TWELV       *                       8AC01620
0046 00 D4000385          STO   L /385        *                       8AC01630
0048 0  08A7              XIO     PUNCH       PUNCH CARD IN 8-8 FORMAT 8AC01640
0049 0  C0A2              LD      PUN         RESTORE LOCATIONS       8AC01650
004A 0  D004              STO     SAVA+1      * DESTROYED BY          8AC01660
004B 0  D007              STO     SAVEA+1     * HASH AND ID           8AC01670
004C 0  6126              LDX   1 38          * NUMBER                8AC01680
004D 0  C09C              LD      X38         *                       8AC01690
004E 00 D5000C00    SAVA  STO   L1 0          *                       8AC01700
0050 0  6127              LDX   1 39          *                       8AC01710
0051 0  C099              LD      X39         *                       8AC01720
0052 00 D5000000    SAVEA STO   L1 0          *                       8AC01730
0054 00 7418 0CEC         MDX   L  PUN,27     UPDATE OUTPUT AREA ADDR 8AC01740
0056 00 0C300E8E          XIO   L  DSWDQ      SENSE DEVICE STATUS     8AC01750
0058 00 4C040D56          BSC   L  *-4,E      BR READER NOT READY     8AC01760
005A 0  70AF        BLK   MDX       MORE                              8AC01770
                    ********************************************      8AC01780
                    *               THE AUX 8-8 DECK HAS BEEN         8AC01790
                    *               * MODIFIED AND PUNCHED            8AC01800
005B 0  3000        WAIT  WAIT                  JOB COMPLETE          8AC01810
005C 0  70FE              MDX       *-2                               8AC01820
                    *               ************************************ 8AC01830
005D 00 C4000E91    HEXA  LD    L  D300                               8AC01840
005F 00 D400012A          STO   L  UPPER                              8AC01850
                    *                                                 8AC01860
                    * THIS  ROUTINE READS THE OBJECT CARDS            8AC01870
                    *                                                 8AC01880
0061 0  0812        RD05  XIO       MSK         MASK                  8AC01890
0062 0  0813        RD20  XIO       STRD        START READER          8AC01900
0063 0  081A        RD25  XIO       ESW         CHECK DSW             8AC01910
0064 00 4C040D63          BSC   L  RD25,E      STILL BYSY IF BR        8AC01920
0066 0  B01B              CMP     MSK2                                8AC01930
0067 0  7004              MDX     RD40        ERROR B2 ON             8AC01940
0068 0  7001              MDX     RD30        READY MAY NOT BE  N     8AC01950
0069 0  7004              MDX     RD50        B4 ON, CARD IN          8AC01960
006A 0  B018        RD30  CMP     MSK3        CHECK IF B5 OR 6  N     8AC01970
006B 0  1000              NOP                 YES                     8AC01980
006C 0  1000        RD40  NOP                                         8AC01990
006D 0  70F5              MDX     RD25        READY NOT ON            8AC02000
006E 0  0811        RD50  XIO       REDSW       RESET                 8AC02010
006F 00 C4000E17          LD    L  CDIN                               8AC02020
0071 00 4C280DD2    RD55  BSC   L  HB05,+Z     BR HEX CARD             8AC02030
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AUX PROGRAM GENERATOR UTILITY PROGRAM
7 CARD EDIT

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0073 0  7014              MDX     SB05                                8AC02040
0074    0000              BSS   E 0                                   8AC02050
0074 0  FFFF        MSK   DC      /FFFF                               8AC02060
0075 0  0480              DC      /0480                               8AC02070
0076 0  0E17        STRD  DC      CDIN                                8AC02080
0077 0  0600              DC      /0600                               8AC02090
0078 0  0600        RDIX  DC      /0600                               8AC02100
0079 0  0601              DC      /0601                               8AC02110
007A 0  0500        RBOT1 DC      /0500                               8AC02120
007B 0  0601              DC      /0601                               8AC02130
007C 0  0550        RBOT2 DC      /0550                               8AC02140
007D 0  0601              DC      /0601                               8AC02150
007E 0  0000        ESW   DC      /0000                               8AC02160
007F C  0700              DC      /0700                               8AC02170
0080 0  0000        REDSW DC      /0000                               8AC02180
0081 0  0703              DC      /0703                               8AC02190
0082 0  0800        MSK2  DC      /0800                               8AC02200
0083 0  0100        MSK3  DC      /0100                               8AC02210
0084 0  00FF        FEED  DC      /00FF                               8AC02220
0085 0  0000        BITS  DC      0                                   8AC02230
0086 0  1802        CEOFX DC      /1802                               8AC02240
0087 0  0180        CEOX  DC      /0180                               8AC02250
                    *                                                 8AC02260
                    * THIS ROUTINE PACKS AND STORES BINARY DA A       8AC02270
                    *                                                 8AC02280
0088 0  6188        SB05  LDX     1 -72                               8AC02290
0089 0  6300              LDX     3 0                                 8AC02300
008A 0  62FD        SB06  LDX     2 -3                                8AC02310
008B 00 C6000DA1    SB07  LD    L2 SL+3                               8AC02320
008D 0  D006              STO     SB10                                8AC02330
008E 00 C5000E60          LD    L1 CDIN+73                            8AC02340
0090 0  18D0              RTE     16                                  8AC02350
0091 00 C5000E5F          LD    L1 CDIN+72                            8AC02360
0093 0  1804              SRA     4                                   8AC02370
0094 0  1000        SB10  SLA     0                                   8AC02380
0095 00 D7000E17          STO   L3 CDIN                               8AC02390
0097 0  7301              MDX   3 1                                   8AC02400
0098 0  7101              MDX   1 1                                   8AC02410
0099 0  7201              MDX   2 1                                   8AC02420
009A 0  70F0              MDX     SB07        FINISHED                8AC02430
009B 0  7101              MDX   1 1                                   8AC02440
009C 0  70ED              MDX     SB06                                8AC02450
009D 0  7003              MDX     LB05                                8AC02460
009E 0  1084        SL    SLT     4                                   8AC02470
009F 0  1088              SLT     8                                   8AC02480
00A0 0  108C              SLT     12                                  8AC02490
                    *                                                 8AC02500
                    * THIS ROUTINE LOADS BINARY DATA INTO MEM RY      8AC02510
                    *                                                 8AC02520
00A1 0  C077        LB05  LD      CDIN+2                              8AC02530
00A2 0  E017              AND     LB15                                8AC02540
00A3 0  D015              STO     PCAM                                8AC02550
00A4 00 4C180CF3          BSC   L MOQ,+-      BR END CARD             8AC02560
00A6 00 66000E20          LDX   L2 BIDA                               8AC02570
00A8 0  6100        LB06  LDX     1 0                                 8AC02580
00A9 0  6A07              STX     2 LB10+1                            8AC02590
00AA 0  C06C              LD      CDIN                                8AC02600
00AB 00 8400012A          A     L UPPER                               8AC02610
00AD 0  D069              STO     CDIN                                8AC02620
00AE 00 6680 0E17         LDX   I2 CDIN                               8AC02630
00B0 00 C5000000    LB10  LD    L1 0                                  8AC02640
00B2 0  D200              STO     2 0                                 8AC02650
00B3 0  7201              MDX     2 1                                 8AC02660
00B4 0  7101              MDX     1 1                                 8AC02670
00B5 00 74FF00B9          MDX   L PCAM,-1     SKIP WORD COUNT  ERO    8AC02680
00B7 0  70F8              MDX     LB10                                8AC02690
00B8 0  70A9              MDX     RD20                                8AC02700
00B9 0  0000        PCAM  DC      0           WORD COUNT              8AC02710
```

```
0DBA 0  00FF       LB15  DC      /00FF                                  8AC02720
0DBB 00 65000500   BT1   LDX  L1 /0500                                  8AC02730
0DBD 00 6D000128         STX  L1 UPPER                                  8AC02740
0DBF 00 4C000DDB         BSC  L  HES                                    8AC02750
0DC1 00 65000600   B13   LDX  L1 /0600                                  8AC02760
0DC3 00 6D000128         STX  L1 UPPER                                  8AC02770
0DC5 00 4C000DDB         BSC  L  HES                                    8AC02780
0DC7 00 65000500   BT2   LDX  L1 /0500                                  8AC02790
0DC9 00 6D000128         STX  L1 UPPER                                  8AC02800
0DCB 00 4C000DDB         BSC  L  HES                                    8AC02810
                   *                                                    8AC02820
                   * THIS ROUTINE PUTS CONVERTED HEX DATA IN O          8AC02830
                   *      STORAGE                                       8AC02840
                   *                                                    8AC02850
0DCD 00 66000E18   LH05  LDX  L2 CDIN+1                                 8AC02860
0DCF 00 74FF0DB9         MDX  L  PCAM,-1                                8AC02870
0DD1 0  70D6             MDX     LB06                                   8AC02880
                   *                                                    8AC02890
                   *  THIS ROUTINE CONVERTS HEX TO BINARY               8AC02900
                   *                                                    8AC02910
                   *        TEST FOR TYPE OF OVERLAY CARDS              8AC02920
0DD2 0  1001       HB05  SLA     1                                      8AC02930
0DD3 00 4C280DB8         BSC  L  BT1,+Z      BR OVERLAY BOOT 1          8AC02940
0DD5 0  1001             SLA     1                                      8AC02950
0DD6 00 4C280DC7         BSC  L  BT2,+Z      BR OVERLAY BOOT 2          8AC02960
0DD8 0  1001             SLA     1                                      8AC02970
0DD9 00 4C280DC1         BSC  L  BT3,+Z      BR OVERLAY AUX LOADER      8AC02980
0DDB 0  6180       HES   LDX  1 -80                                     8AC02990
0DDC 0  1810             SRA     16                                     8AC03000
0DDD 0  D0DB             STO     PCAM                                   8AC03010
0DDE 0  1810       HB06  SRA     16                                     8AC03020
0DDF 0  6204             LDX  2 4                                       8AC03030
0DE0 0  1004       HB10  SLA     4                                      8AC03040
0DE1 0  D013             STO     TEMP1                                  8AC03050
0DE2 00 C5000E68         LD   L1 CDIN+81                                8AC03060
0DE4 00 4C180DCD         BSC  L  LH05,+-                                8AC03070
0DE6 00 44000DF6         BSI  L  HTOB                                   8AC03080
0DE8 0  E80C             OR      TEMP1                                  8AC03090
0DE9 0  7101             MDX  1  1                                      8AC03100
0DEA 0  72FF             MDX  2  -1                                     8AC03110
0DEB 0  70F4             MDX     HB10                                   8AC03120
0DEC 00 67800DB9         LDX  I3 PCAM                                   8AC03130
0DEE 00 D7000E17         STO  L3 CDIN                                   8AC03140
0DF0 00 74010DB9         MDX  L  PCAM,1                                 8AC03150
0DF2 0  7101             MDX  1  1                                      8AC03160
0DF3 0  70EA             MDX     HB06                                   8AC03170
0DF4 0  70D8             MDX     LH05                                   8AC03180
0DF5    0001       TEMP1 BSS     1                                      8AC03190
                   *                                                    8AC03200
                   *  THIS SUBROUTINE CONVERTS HEX TO BEIN C AC)        8AC03210
                   *   AND LEAVES RESULT IN ACCUMULATOR                 8AC03220
                   *                                                    8AC03230
0DF6    0001       HTOB  BSS     1                                      8AC03240
0DF7 00 4C100E00         BSC  L  HT10,-                                 8AC03250
0DF9 0  6306             LDX  3  6                                      8AC03260
0DFA 0  1002             SLA     2                                      8AC03270
0DFB 0  13C0             SLC  3                                         8AC03280
0DFC 00 C7000E07         LD   L3 HTB1                                   8AC03290
0DFE 00 4C800DF6         BSC  I  HTOB                                   8AC03300
0E00 0  630A       HT10  LDX  3  10                                     8AC03310
0E01 0  1001             SLA     1                                      8AC03320
0E02 0  13C0             SLC  3                                         8AC03330
0E03 00 C7000E0D         LD   L3 HTB2                                   8AC03340
0E05 00 4C800DF6         BSC  I  HTOB                                   8AC03350
0E07 0  000F       HTB1  DC      /000F                                  8AC03360
0E08 0  000E             DC      /000E                                  8AC03370
0E09 0  000D             DC      /000D                                  8AC03380
0E0A 0  000C             DC      /000C                                  8AC03390
```



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0E0B 0  0008             DC      /0008                                  8AC03400
0E0C 0  000A             DC      /000A                                  8AC03410
0E0D 0  0009       HTB2  DC      /0009                                  8AC03420
0E0E 0  0008             DC      /0008                                  8AC03430
0E0F 0  0007             DC      /0007                                  8AC03440
0E10 0  0006             DC      /0006                                  8AC03450
0E11 0  0005             DC      /0005                                  8AC03460
0E12 0  0004             DC      /0004                                  8AC03470
0E13 0  0003             DC      /0003                                  8AC03480
0E14 0  0002             DC      /0002                                  8AC03490
0E15 0  0001             DC      /0001                                  8AC03500
0E16 0  0000             DC      /C000                                  8AC03510
0E17    0050       CDIN  BSS     80                                     8AC03520
0E20               BIDA  EQU     CDIN+9                                 8AC03530
012A               UPPER EQU     298                                    8AC03540
                   ********************************************************8AC03550
0E67 0  0826       BLA   XIO     DSWOQ       SEN READER                 8AC03560
0E68 00 4C040E67         BSC  L  BLA,E       BR READER NOT READY        8AC03570
0E6A 00 0C000CEE         XIO  L  SENBI                                  8AC03580
0E6C 0  1808             SRA     8                                      8AC03590
0E6D 00 F4000D84         EOR  L  FEED                                   8AC03600
0E6F 00 D4000D85         STO  L  BITS                                   8AC03610
0E71 00 4C18CE92         BSC  L  TOOT,+-     BR READ AUX LOADER         8AC03620
0E73 0  0818       BBB   XIO     RDIN        READ CARD                  8AC03630
0E74 0  0819       ABB   XIO     DSWOQ       SENSE READER               8AC03640
0E75 00 4C040E74         BSC  L  ABB,E       BR READER NOT READY        8AC03650
0E77 0  6126             LDX  1  38                                     8AC03660
0E78 0  C013             LD      RDIN                                   8AC03670
0E79 0  D004             STO     DHECK+1                                8AC03680
0E7A 0  C015             LD      DEOFF                                  8AC03690
0E7B 0  1802             SRA     2                                      8AC03700
0E7C 0  D013             STO     DEOFF                                  8AC03710
0E7D 00 85000000   DHECK A     L1 0                                      8AC03720
0E7F 0  71FF             MDX     1 -1                                   8AC03730
0E80 0  70FC             MDX     DHECK                                  8AC03740
0E81 00 4C200E8A         BSC  L  INIZA,Z     BR CARD IN WRONG           8AC03750
0E83 00 741B0E8C         MDX  L  RDIN,27                                8AC03760
0E85 0  C00A             LD      DEOFF                                  8AC03770
0E86 00 4C200E73         BSC  L  BBB,Z       BR READ MORE CARDS         8AC03780
                   *             ALL CARDS LOADED AND CHECKED           8AC03790
0E88 00 4C000D5D         BSC  L  HEXA        BR ALL AUX CARDS READ      8AC03800
                   ********************************************************8AC03810
                   *             THE AUX 8-8 CARDS FAILED TO READ IN    8AC03820
                   *             * CORRECTLY. CHECK FOR PROPER CARD     8AC03830
                   *             * SEQUENCE AND TRY AGAIN               8AC03840
0E8A 0  3000       INIZA WAIT                                           8AC03850
0E8B 0  70FE             MDX     *-2                                    8AC03860
                   ********************************************************8AC03870
0E8C    0000             BSS  E  0                                      8AC03880
0E8D 0  0536       RDIN  DC      /0536       INITIAL READ IN ADDRESS    8AC03890
0E8E 0  0601             DC      /0601                                  8AC03900
0E8F 0  0000       DSWOQ DC      0                                      8AC03910
0E90 0  0703             DC      /0703                                  8AC03920
0E91 0  1802       DEOFF DC      /1802       COUNTER AND ID             8AC03930
0E92 0  0500       D300  DC      /0500                                  8AC03940
                   ********************************************************8AC03950
0E92 00 0C000D7A   TOOT  XIO  L  RBOT1       READ 1ST BOOT              8AC03960
0E94 0C 0C000E8E         XIO  L  DSWOQ       SENSE READER               8AC03970
0E96 00 4C040E94         BSC  L  *-4,E                                  8AC03980
0E98 00 0C000D7C         XIO  L  RBOT2       READ 2ND BOOT              8AC03990
0E9A 00 0C000E8E         XIO  L  DSWOQ       SENSE READER               8AC04000
0E9C 00 4C040E9A         BSC  L  *-4,E                                  8AC04010
                   ************************************************     8AC04020
                   *                                                    8AC04030
                   *             READ AND CHECK CARD 2 AND 3 OF AUX     8AC04040
                   *             * LOADER                               8AC04050
0E9E 0  7009             MDX     FIRA                                   8AC04060
0E9F 00 C4000D86   FIRSQ LD   L  CEOFX                                  8AC04070
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
7 CARD EDIT

```
0EA1 0  D006          STO     FIRA                                    8AC04080
0EA2 00 0C000D78  KK  XIO  L  RDIX      READ CARD                     8AC04090
0EA4 00 0C000E8E      XIO  L  DSWOQ     SENSE READER                  8AC04100
0EA6 00 4C040EA4      BSC  L  *-4,E                                   8AC04110
0EA8 0  70F6      FIRA MDX      FIRSQ     MDX OR NO OP                8AC04120
0EA9 0  6126           LDX   1 38                                     8AC04130
0EAA 00 C4000D78       LD   L  RDIX                                   8AC04140
0EAC 0  D006           STO     CHECZ+1                                8AC04150
0EAD 00 C4000D86       LD   L  CEOFX                                  8AC04160
0EAF 0  1802           SRA     2                                      8AC04170
0EB0 00 D4000D86       STO  L  CEOFX                                  8AC04180
0EB2 00 85000000  CHECZ A    L1 0                                     8AC04190
0EB4 0  71FF           MDX   1 -1                                     8AC04200
0EB5 0  70FC           MDX     CHECZ                                  8AC04210
0EB6 0  4820           BSC     Z         SKIP CARD IN CORE OK         8AC04220
0EB7 0  70FF      A    MDX     A         FAILED TO LOAD AUX LOADER    8AC04230
0EB8 00 741B0D78       MDX  L  RDIX,27                                8AC04240
0EBA 00 C4000D86       LD   L  CEOFX                                  8AC04250
0EBC 00 F4000D87       EOR  L  CEOX                                   8AC04260
0EBE 00 4C200EA2       BSC  L  KK,Z      BR READ MORE CARDS           8AC04270
                  *               THE ACTUAL AUX LOADER IN CORE OK     8AC04280
                  *               READ OVERLAY CARDS                   8AC04290
0EC0 00 4C000D5D       BSC  L  HEXA                                   8AC04300
                  ************************************************** 8AC04310
                  *                                                    8AC04320
                  *                                                    8AC04330
                  *     BOOTSTRAP PUNCH ROUTINE                        8AC04340
                  *                                                    8AC04350
0EC2 00 65000500  BOOT LDX  L1 /500     SET ADDR OF DATA             8AC04360
0EC4 00 6D000CEC       STX  L1 PUN      * TO BE PUNCHED  (BOOT 1)    8AC04370
0EC6 0  6128      LA   LDX   1 40       COUNTER                      8AC04380
0EC7 0  6200           LDX   2 0                                      8AC04390
0EC8 00 67000335       LDX  L3 /335     PUNCH TABLE ADDR AT /336     8AC04400
0ECA 00 C4000CEC       LD   L  PUN                                    8AC04410
0ECC 0  D003           STO     SPLAS+1                                8AC04420
0ECD 0  10A0      NIGS SLT      32                                     8AC04430
0ECE 0  7301           MDX   3 1                                      8AC04440
0ECF 00 C6000000  SPLAS LD   L2 0       OBTAIN DATA FROM CARD READ   8AC04450
0ED1 0  1808           RTE     24                                     8AC04460
0ED2 00 D7000000       STO  L3 0        STORE IN PUNCH TABLE         8AC04470
0ED4 0  7301           MDX   3 1                                      8AC04480
0ED5 0  1098           SLT     24                                     8AC04490
0ED6 00 D7000000       STO  L3 0        STORE IN PUNCH TABLE         8AC04500
0ED8 0  7201           MDX   2 1                                      8AC04510
0ED9 0  71FF           MDX   1 -1                                     8AC04520
0EDA 0  70F2           MDX     NIGS                                   8AC04530
0EDB 00 C4000385       LD   L  /385     PLACE PUNCH TERMINATOR       8AC04540
0EDD 00 EC000CE9       OR   L  TWELV    *                            8AC04550
0EDF 00 D4000385       STO  L  /385     *                            8AC04560
0EE1 00 0C000E8E       XIO  L  DSWOQ    SENSE DEVICE STATUS          8AC04570
0EE3 00 0C000CF0       XIO  L  PUNCH    PUNCH CARD IN 8-8 FORMAT     8AC04580
0EE5 00 0C000E8E       XIO  L  DSWOQ    SENSE READER                 8AC04590
0EE7 00 4C040EC5       BSC  L  *-4,E                                  8AC04600
0EE9 00 65000550  GO   LDX  L1 /550     SET ADDR OF DATA TO BE       8AC04610
0EEB 00 6D000CEC       STX  L1 PUN      * PUNCHED (BOOT 2)           8AC04620
0EED 00 4C000CFA  ABQ  BSC  L  BOO                                    8AC04630
                  ************************************************** 8AC04640
                  *                                                    8AC04650
                  *                                                    8AC04660
                  *       AUX LOADER PUNCH ROUTINE                     8AC04670
                  *                                                    8AC04680
0EEF 00 65000600  LOAD LDX  L1 /600      SET ADDR OF DATA TO BE PU    8AC04690
0EF1 00 6D000CEC       STX  L1 PUN                                    8AC04700
0EF3 00 4C000D0A       BSC  L  MORE                                   8AC04710
                  ************************************************** 8AC04720
0EF5 00 C4000CF1  EDIT LD   L  PUNCH+1                                8AC04730
0EF7 00 EC000CE4       OR   L  AREA                                   8AC04740
0EF9 00 D4000CF1       STO  L  PUNCH+1                                8AC04750
```


AUX PROGRAM GENERATOR UTILITY PROGRAM
7 CARD EDIT

```
0EFB 00 C4000D77       LD   L  STRD+1                                 8AC04760
0EFD 00 EC000CE4       OR   L  AREA                                   8AC04770
0EFF 00 D4000D77       STO  L  STRD+1                                 8AC04780
0F01 00 C4000D79       LD   L  RDIX+1                                 8AC04790
0F03 00 EC000CE4       OR   L  AREA                                   8AC04800
0F05 00 D4000D79       STO  L  RDIX+1                                 8AC04810
0F07 00 C4000D7B       LD   L  RBOT1+1                                8AC04820
0F09 00 EC000CE4       OR   L  AREA                                   8AC04830
0F0B 00 D4000D7B       STO  L  RBOT1+1                                8AC04840
0F0D 00 C4000D7D       LD   L  RBOT2+1                                8AC04850
0F0F 00 EC000CE4       OR   L  AREA                                   8AC04860
0F11 00 D4000D7D       STO  L  RBOT2+1                                8AC04870
0F13 00 C4000D7F       LD   L  ESW+1                                  8AC04880
0F15 00 EC000CE4       OR   L  AREA                                   8AC04890
0F17 00 D4000D7F       STO  L  ESW+1                                  8AC04900
0F19 00 C4000D81       LD   L  REDSW+1                                8AC04910
0F1B 00 EC000CE4       OR   L  AREA                                   8AC04920
0F1D 00 D4000D81       STO  L  REDSW+1                                8AC04930
0F1F 00 C4000E8D       LD   L  RDIN+1                                 8AC04940
0F21 00 EC000CE4       OR   L  AREA                                   8AC04950
0F23 00 D4000E8D       STO  L  RDIN+1                                 8AC04960
0F25 00 C4000E8F       LD   L  DSWOQ+1                                8AC04970
0F27 00 EC000CE4       OR   L  AREA                                   8AC04980
0F29 00 D4000E8F       STO  L  DSWOQ+1                                8AC04990
0F2B 00 4C000E67       BSC  L  BLA                                    8AC05000
0F2E    0EF5           END     EDIT                                   8AC05010
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
7 CARD EDIT

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
A	0EB7	0EB7
ABB	0E74	0E75
ABQ	0EED	0CF8
ADD	0CE6	0D22
AREA	0CE4	0EF7,0EFD,0F03,0F09,0F0F,0F15,0F13,0F21,0F27
AUXX	0D07	0CF5
B88	0E73	CE86
BIDA	0E20	0DA6
BITS	0D85	0CF3,0E6F
BLA	0E67	0E68,0F28
BLK	0D5A	
BOO	0CFA	0EED
BOOT	0EC2	0CF7
BT1	0D8B	0DD3
BT2	0DC7	0DD6
BT3	0DC1	0DD9
CDIN	0E17	0D6F,0D76,0D8E,0D91,0D95,0DA1,0DAA,0DAD,0DAE,0DCD, 0DE2,0DEE,0E67
CEOFF	0CF2	0D1A,0D1C
CEOFX	0D86	0E9F,0EAD,0EB0,0EBA
CEOX	0D87	0EBC
CHECK	0D1D	0D18,0D20
CHECZ	0EB2	0EAC,0EB5
DEOFF	0E90	0E7A,0E7C,0E85
DHECK	0E7D	0E79,0E80
DSWOQ	0E8E	0D01,0D56,0D67,0E74,0E94,0E9A,0EA4,0EE1,0EE5,0F25, 0F29
D300	0E91	0D5D
EDIT	0EF5	0F2D
EOR	0CE8	0CFF,0D2C
ESW	0D7E	0D63,0F13,0F17
FEED	0D84	0E6D
FFFF	0CE5	0D21
FIRA	0EA8	0E9E,0EA1
FIRSQ	0E9F	0EA8
GO	0EE9	
HASH	0D24	0D19
HB05	0DD2	0D71
HB06	0DDE	0DF3
HB10	0DE0	0DE8
HES	0DDB	0DBF,0DC5,0DCB
HEXA	0D5D	0E88,0EC0
HTB1	0E07	0DFC
HTB2	0E0D	0E03
HTOB	0DF6	0DE6,0DFE,0E05
HT10	0E00	0DF7
INIZA	0E8A	0E81
KK	0EA2	0EBE
LA	0EC6	0D05
LB05	0DA1	0D9D
LB06	0DA8	0DD1
LB10	0DB0	0DA9,0DB7
LB15	0DBA	0DA2
LH05	0DCD	0DE4,0DF4
LO	0CF9	0CFA
LOAD	0EEF	0CF9
MOQ	0CF3	0DA4
MOR	0D01	0D03
MORE	0D0A	0D5A,0EF3
MSK	0D74	0D61
MSK2	0D82	0D66
MSK3	0D83	0D6A
NIG	0D35	0D42
NIGS	0ECD	0EDA
NUM	0D2A	0D17

AUX PROGRAM GENERATOR UTILITY PROGRAM
7 CARD EDIT

NUMBE	0CE7	0D27,0D29
PCAM	0DB9	0DA3,0D85,0DCF,0DDD,0DEC,0DF0
PUN	0CEC	0D09,0D0B,0D16,0D33,0D49,0D54,0EC4,0ECA,0EE8,0EF1
PUNCH	0CF0	0D48,0EE3,0EF5,0EF9
RBOT1	0D7A	0E92,0F07,0F0B
RBOT2	0D7C	0E98,0F0D,CF11
RDIN	0E8C	0E73,0E78,0E83,0F1F,0F23
RDIX	0D78	0EA2,0EAA,0E88,0F01,0F05
RD05	0061	
RD20	0D62	0D88
RD25	0D63	0D64,0D6D
RD30	0D6A	0D68
RD40	0D6C	0D67
RD50	0D6E	0D69
RD55	0D71	
REDSW	0D80	0D6E,0F19,0F1D
SAV	0D0E	0D0C
SAVA	0D4E	0D4A
SAVE	0D12	0D0D
SAVEA	0D52	0D4B
SB05	0D88	0D73
SB06	0D8A	0D9C
SB07	0D8B	0D9A
SB10	0D94	0D8D
SENBI	0CEE	0E6A
SL	0D9E	0D88
SPLA	0D37	0D34
SPLAS	0ECF	0ECC
STRD	0D76	0D62,0EFB,0EFF
TEMP1	0DF5	0DE1,0DE8
TOOT	0E92	0E71
TWELV	0CE9	0D45,0EDD
UPPER	012A	0D5F,0DAB,0D8D,0DC3,0DC9
WAIT	0D5B	0D2D
X38	0CEA	0D10,0D4D
X39	0CEB	0D14,0D51

```
                         ABS                                              8AC05030
028C                     ORG     /36                                      8AC05040
                    *                                                     8AC05050
                    ******************************************************8AC05060
1000                APEA `EQU     /1000      1ST 1442 AREA CODE          8AC05070
                    *       IF THIS PROG IS TO BE USED FOR A MACH         8AC05080
                    * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH       8AC05090
                    * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST    8AC05100
                    * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A      8AC05110
                    * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG       8AC05120
                    * GENERATOR WRITE-UP FOR PROCEDURE. (SPECIAL)         8AC05130
                    * THE ABOVE STATEMENTS APPLIES TO THE FIRST SEVEN     8AC05140
                    * CARDS.                                             8AC05150
                    * FOR CARDS NUMBERED 6 AND 7 THE AREA CODES MUST     8AC05160
                    * BE CHANGED DIRECTLY BY MEANS OF A KEYPUNCH.        8AC05170
                    * THE FIVE AREA CODE BITS 0 THRU 4 ARE CONTAINED     8AC05180
                    * IN PUNCH POSITIONS 12 THRU 2 RESPECTIVELY OF       8AC05190
                    *     COLUMNS 40 OF CARD NUMBER 6                    8AC05200
                    *     COLUMNS 52 OF CARD NUMBER 7                    8AC05210
                    *     COLUMNS 56 OF CARD NUMBER 7                    8AC05220
                    * CHANGE THE ABOVE PUNCH POS IN THE INDICATED        8AC05230
                    * COLUMNS TO IMPLEMENT A CHANGE IN AREA CODE         8AC05240
                    ******************************************************8AC05250
                    *                                                     8AC05260
                    *                                                     8AC05270
                    *                                                     8AC05280
                    *            AUX 1 CARD EDIT AND PUNCH                8AC05290
                    *            *************************                8AC05300
                    * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE         8AC05310
                    *                                                     8AC05320
                    *                                                     8AC05330
                    *            CE SWITCH SETTINGS                       8AC05340
                    *                    NOT USED BY THIS PROGRAM         8AC05350
                    *                                                     8AC05360
                    *                                                     8AC05370
                    *                                                     8AC05380
                    *   LOAD CARD DECK ASSEMBLED IN ORDER SHOWN BELOW     8AC05390
                    *   INTO AUX STORAGE                                  8AC05400
                    *                                                     8AC05410
                    *    1. THIS AUX PROGRAMS FIRST 7 CARDS.              8AC05420
                    *       ( THIS IS ESSENTIALLY A 9 CARD PROGRAM        8AC05430
                    *       WHERE THE LAST TWO CARDS ARE ENTERED AS       8AC05440
                    *       SPECIFIED IN PART 5. )                        8AC05450
                    *    2. ONE OF THE 7 AUX PROG CARDS BEING CHANGED     8AC05460
                    *    3. HEX CORRECTION CARDS (STANDARD FORMAT)        8AC05470
                    *          THESE CARDS MUST ADHERE TO THE FOLLOWNG    8AC05480
                    *       FORMAT                                        8AC05490
                    *                                                     8AC05500
                    *          COL.        FIELD DESCRIPTION              8AC05510
                    *          1              12 PUNCH                    8AC05520
                    *          2-5     ADDRESS WHERE 1ST CORRECTION GOES  8AC05530
                    *          6              BLANK                       8AC05540
                    *          7-10       FIRST CORRECTION WORD           8AC05550
                    *          11             BLANK                       8AC05560
                    *          12-15      SECOND CORRECTION WORD          8AC05570
                    *          16             BLANK                       8AC05580
                    *          ETC.    UP TO 15 CORRECTION WORDS CAN BE   8AC05590
                    *                  PUNCHED IN ONE CARD. CORRECTION    8AC05600
                    *                  WORDS ARE ENTERED AT SUCCESIVELY   8AC05610
                    *                  HIGHER ADDRESSES FOLLOWING THE     8AC05620
                    *                  1ST CORRECTION WORDS ADDRESS.      8AC05630
                    *    4. ONE BLANK CARD                                8AC05640
                    *    5. CARDS NUMBERED 6 AND 7 OF THIS AUX PROG.      8AC05650
                    *    6. THREE OR MORE BLANK CARDS.                    8AC05660
                    *                                                     8AC05670
                    *                                                     8AC05680
                    * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION    8AC05690
                    * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.          8AC05700
```



```
                    ******************************************************8AC05710
                    *                                                     8AC05720
                    *            AUX PROG ENTRY POINTS                    8AC05730
                    *            *********************                    8AC05740
                    *                                                     8AC05750
                    *            1ST PASS ENTRY                           8AC05760
0036 0  C051        PCAM  LD     CEON       PLACE BRANCH                  8AC05770
0037 0  D0CC        PCA27 STO    /04        * TO RETUR LABEL              8AC05780
0038 0  C00D        TEMP  LD     AEOFF      RESTORE LOC NICE              8AC05790
0039 0  D0FB        TEMP1 STO    /35        * IN AUX LOADER               8AC05800
                    *                                                     8AC05810
                    *            ALL BUT 1ST PASS ENTRY POINT             8AC05820
003A 0  084D        RETUR XIO    CEON                                     8AC05830
003B 0  08D6              XIO    DSPLX      RESET DSW                     8AC05840
003C 0  6A10              STX    2 SAVE2+1                                8AC05850
003D 0  6B11              STX    3 SAVE3+1                                8AC05860
                    *                                                     8AC05870
                    *            BRANCH VECTOR                            8AC05880
003E 0  704D        GONE  MDX    DATAR                                    8AC05890
                    ******************************************************8AC05900
                    *                                                     8AC05910
                    * THIS RT CONVERTS HEX TO BINARY AND PLACES IT        8AC05920
                    *                                                     8AC05930
003F 0  4810              BSC    -                                        8AC05940
0040 0  703F              MDX    END                                      8AC05950
0041 0  7101        HB06  MDX    1 1                                      8AC05960
0042 0  700E              MDX    HB07                                     8AC05970
                    *                  BR ENTIPE FIELD CONVERTED          8AC05980
                    *            READ ANOTHER CARD                        8AC05990
0043 0  0838        LH05  XIO    READ                                     8AC06000
0044 0  C002              LD     AEOFF+1                                  8AC06010
0045 0  0023              STO    NOA                                      8AC06020
0046 0  70D7        AEOFF DC     NNNN       MDX SAVE2                     8AC06030
0047 0  7009              MDX  X FIRSF-NOA-1                              8AC06040
                    ******************************************************8AC06050
                    *                                                     8AC06060
                    *            EXIT POINTS TO AUX LOADER                8AC06070
                    *            *************************                8AC06080
                    *                                                     8AC06090
                    *            TERMINATE EXIT POINT                     8AC06100
0048 00 65000813    NOTRD LDX    L1 WWWW                                  8AC06110
004A 0  69B9              STX    1 /04                                    8AC06120
004B 0  08CA              XIO    CEOFF                                    8AC06130
                    *                                                     8AC06140
                    *            NORMAL EXIT POINT                        8AC06150
004C 00 66000000    SAVE2 LDX    L2 0                                     8AC06160
004E 00 67000000    SAVE3 LDX    L3 0                                     8AC06170
                    *                                                     8AC06180
                    *                        EXIT TO AUX LOADER           8AC06190
0050 0  70BC              MDX    QQQQ                                     8AC06200
                    ******************************************************8AC06210
0051 0  6204        HB07  LDX    2 4                                      8AC06220
0052 0  1004        HB10  SLA    4                                        8AC06230
0053 0  D0E5              STO    TEMP1                                    8AC06240
0054 00 C50000D9          LD     L1 DUTAB+81                              8AC06250
0056 0  4818              BSC    +-                                       8AC06260
0057 0  70EB              MDX    LH05                                     8AC06270
                    *                                                     8AC06280
0058 0  6300        HT0B  LDX    3 0        CONVERT 1 HEX COL TO BIN      8AC06290
0059 0  4828              BSC    +Z         SKIP IF NOT A-F               8AC06300
005A 0  7309              MDX    3 9        ADD 9 FOR ALPHA               8AC06310
0058 0  1003              SLA    3          ELIMINATE ZONE BITS           8AC06320
005C 0  4818              BSC    +-                                       8AC06330
005D 0  7007              MDX    HTBZ                                     8AC06340
005E 0  7301              MDX    3 1                                      8AC06350
005F 0  4828        HT0B1 BSC    +Z                                       8AC06360
0060 0  7002              MDX    HTBX                                     8AC06370
0061 0  1001              SLA    1          PREPARE TO LK AT NEXT BIT     8AC06380
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1 CARD EDIT

```
0062 0  70F8              MDX     HTOB1-1                                    8AC06390
0063 0  68D4      HTBX    STX   3 TEMP                                       8AC06400
0064 0  C0D3              LD      TEMP        LOAD BINARY BITS               8AC06410
0065 0  E8D3      HTBZ    OR      TEMP1       ADD TO PREVIOUS CHARS          8AC06420
0066 0  7101              MDX   1 1                                          8AC06430
0067 0  72FF              MDX   2 -1                                         8AC06440
0068 0  70E9              MDX     H310                                       8AC06450
0069 0  7009      NOA     MDX     FIRSP                                      8AC06460
006A 00 6400006A  SAVE    STO   L SAVE        PLACE DATA                     8AC06470
                  *                                                        8AC06480
                  *               TEST FOR MAX ADDR BOUNDARY               8AC06490
006C 0  C0CA              LD      PCA27                                      8AC06500
006D 0  90FD              S       SAVE+1                                     8AC06510
006E 0  4808              BSC     +                                          8AC06520
006F 0  70D8              MDX     NOTRD                                      8AC06530
0070 00 74010068          MDX   L SAVE+1,1    INCREMENT ADDRESS              8AC06540
0072 0  70CE              MDX     H806                                       8AC06550
                  ********************************************************** 8AC06560
                  *                                                        8AC06570
                  *               SET ADDRESS OF HEX DATA                  8AC06580
0073 0  90C2      FIRSP S         PCAM                                       8AC06590
0074 0  4828              BSC     +Z                                         8AC06600
0075 0  70D2              MDX     NOTRD                                      8AC06610
0076 0  800D              A       PLUM                                       8AC06620
0077 0  D0F3              STO     SAVE+1                                     8AC06630
0078 0  C0D8              LD      H807                                       8AC06640
0079 0  D0EF              STO     NOA                                        8AC06650
                  ********************************************************** 8AC06660
                  *                                                        8AC06670
007A      0000            BSS   E 0                                          8AC06680
007A 0  70C6              MDX     H806                                       8AC06690
007B 0  7045      RMAR    MDX   X ALS-GONE+1-3                               8AC06700
007C 0  0088      REED    DC      DUTAB                                      8AC06710
007D 0  1600              DC      AREA+READ  READ CARD IMAGE IOCC            8AC06720
007E 0  0088      PUCH    DC      DUTAB                                      8AC06730
007F 0  1601              DC      AREA+READ+BIT15 8-8 READ IOCC              8AC06740
                  ********************************************************** 8AC06750
                  *                                                        8AC06760
0080 0  C0FA      END     LD      RMAR        MDX TO ALS                     8AC06770
0081 0  D0BD              STO     GONE+1                                     8AC06780
0082 0  08FB              XIO     PUCH                                       8AC06790
0083 0  70C8              MDX     SAVE2                                      8AC06800
                  ********************************************************** 8AC06810
0084 0  00D8      PLUM    DC      RETAB                                      8AC06820
0085 0  90B4      ALS     S       RETUR                                      8AC06830
0086 0  4820              BSC     Z           RESULT SHOULD BE ZERO          8AC06840
0087 0  70C0              MDX     NOTRD                                      8AC06850
                  ********************************************************** 8AC06860
                  *                                                        8AC06870
                  *               OVERLAY HEX CARD READ IN AREA            8AC06880
0088                      ORG     136                                        8AC06890
0088      0000    DUTAB   BSS   E 0                                          8AC06900
0088 0  7035      CEON    DC      TTTT                                       8AC06910
0089 0  1001              DC      AREA+CEMOD+BIT15  CE ON IOCC               8AC06920
                  *                                                        8AC06930
                  *                                                        8AC06940
                  *               READ AUX PROGRAM CARD                    8AC06950
008A 0  7053      HEX1    MDX   X HEX11-GONE-1    HEX CARD XFER AD RESS    8AC06960
008B 0  61AF      RHEM    LDX   1 -81                                        8AC06970
                  *                                                        8AC06980
008C 0  C0FD      DATAR   LD      HEX1                                       8AC06990
008D 0  D0B0              STO     GONE                                       8AC07000
008E 0  C0FC              LD      RHEM                                       8AC07010
008F 0  D0AA              STO     RETUR                                      8AC07020
0090 0  082D              XIO     READA       READ CARD TO BE MODIFIED       8AC07030
0091 0  70BA              MDX     SAVE2                                      8AC07040
                  ********************************************************** 8AC07050
                  *                                                        8AC07060
```


AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1 CARD EDIT

```
                  *               INSPECT DATA CARD READ AND PREPARE       8AC07070
                  *               * FOR HEX OVERLAY CARDS                  8AC07080
0092 0  61F9      HEX11 LDX     1 -7                                         8AC07090
0093 00 C50000C8  ERIC  LD    L1 CANUM+7                                     8AC07100
0095 00 F40000FF        EOR   L  RETAB+39                                    8AC07110
0097 00 4C18009D        BSC   L  MATCH,+-   BR MATCH FOUND                   8AC07120
0099 0  7101            MDX     1 1                                          8AC07130
009A 0  70F8            MDX     ERIC                                         8AC07140
009B 00 4C000048        BSC   L  NOTRD      BR NO MATCH FOUND                8AC07150
009D 0  6226      MATCH LDX     2 38                                         8AC07160
009E 00 C50000CF        LD    L1 UNIGE+7                                     8AC07170
00A0 00 860000D8  HECK  A     L2 RETAB                                       8AC07180
00A2 0  72FF            MDX     2 -1                                         8AC07190
00A3 0  70FC            MDX     HECK                                         8AC07200
00A4 00 4C200048        BSC   L  NOTRD,Z    BR CARD IN WRONG                 8AC07210
00A6 00 C50000CF        LD    L1 UNIGE+7                                     8AC07220
00A8 00 D40000FE        STO   L  RETAB+38   PLACE UNIQUE DATA WORD           8AC07230
00AA 0  C00A            LD      SHERI                                        8AC07240
00AB 0  D09A            STO     AEOFF                                        8AC07250
00AC 00 C50000D6        LD    L1 STADD+7                                     8AC07260
00AE 0  D087            STO     PCAM                                         8AC07270
00AF 00 C500008D        LD    L1 AUX+7                                       8AC07280
00B1 0  D085            STO     PCA27                                        8AC07290
00B2 0  C00D            LD      HEX2                                         8AC07300
00B3 0  D08A            STO     GONE        PLACE BRANCH VECTOR              8AC07310
00B4 0  708E            MDX     LHOS                                         8AC07320
                  *                                                        8AC07330
00B5 0  7005      SHERI MDX   X SAVE2-AEOFF-1                                8AC07340
                  *                                                        8AC07350
00B6 0  00F3      *AUX  DC      /F3                                          8AC07360
00B7 0  00F3            DC      /F3                                          8AC07370
00B8 0  00F3            DC      /F3                                          8AC07380
00B9 0  00F3            DC      /F3                                          8AC07390
00BA 0  00F3            DC      /F3                                          8AC07400
00BB 0  00F3            DC      /F3                                          8AC07410
00BC 0  00FE            DC      /00FE                                        8AC07420
00BE      0000          BSS   E 0                                            8AC07430
00BE 0  00D8      READA DC      RETAB                                        8AC07440
00BF 0  1601            DC      AREA+READ+BIT15 READ CARD IN 8-8 IOCC        8AC07450
00C0 0  C049      HEX2  LD    X DUTAB-GONE-1                                 8AC07460
                  ********************************************************** 8AC07470
                  *                                                        8AC07480
                  *               CARD NUMBER TABLE                        8AC07490
00C1 0  4000      CANUM DC      /4000       1 ST CARD X COL 80             8AC07500
00C2 0  2000            DC      /2000       2 ND       0                   8AC07510
00C3 0  1000            DC      /1000       3 RD       1                   8AC07520
00C4 0  0800            DC      /0800       4 TH       2                   8AC07530
00C5 0  0400            DC      /0400       5 TH       3                   8AC07540
00C6 0  0200            DC      /0200       6 TH       4                   8AC07550
00C7 0  0100            DC      /0100       7 TH       5                   8AC07560
                  *                                                        8AC07570
                  *               UNIQUE DATA WORD TABLE                   8AC07580
00C8 0  0600      UNIGE DC      /0600                                        8AC07590
00C9 0  0180            DC      /0180                                        8AC07600
00CA 0  0060            DC      /0060                                        8AC07610
00CB 0  0018            DC      /0018                                        8AC07620
00CC 0  0006            DC      /0006                                        8AC07630
00CD 0  0001            DC      /0001                                        8AC07640
00CE 0  0000            DC      /0000                                        8AC07650
                  *                                                        8AC07660
                  *               STARTING ADDRESS OF DATA CARD            8AC07670
00CF 0  0036      STADD DC      54                                           8AC07680
00D0 0  0051            DC      81                                           8AC07690
00D1 0  006C            DC      108                                          8AC07700
00D2 0  0087            DC      135                                          8AC07710
00D3 0  00A2            DC      162                                          8AC07720
00D4 0  00BD            DC      189                                          8AC07730
00D5 0  00D8            DC      216                                          8AC07740
```

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0006 0  00FE            DC      254                                     8AC07750
                ********************************************************* 8AC07760
00D7                    ORG     216                                     8AC07770
                *                                                       8AC07780
                *   CARD TO BE MODIFIED STORED HERE                     8AC07790
00D8    0028    RETAB BSS       40                                      8AC07800
                ********************************************************* 8AC07810
0600            READ  EQU       /0600       INITIALIZE READ             8AC07820
0500            WRITE EQU       /0500       INITIALIZE WRITE            8AC07830
0002            BIT14 EQU       /0002                                   8AC07840
0001            BIT15 EQU       /0001       CE ON, RESET OF DSW         8AC07850
0400            CTRL  EQU       /0400       CONTROL FUNCTION            8AC07860
0700            SENSE EQU       /0700       SENSE FUNCTION              8AC07870
0000            CEMOD EQU       /0000       CE MODE FUNCTION            8AC07880
0080            BIT8  EQU       /0080       STACKER SELECT BIT          8AC07890
0040            BIT9  EQU       /0040                                   8AC07900
0020            BIT10 EQU       /0020                                   8AC07910
                *                                                       8AC07920
                ********************************************************* 8AC07930
                ********************************************************* 8AC07940
                ********************************************************* 8AC07950
                *                                                       8AC07960
                * THE FOLLOWING PROGRAM DATA IS LOC IN CARD 6           8AC07970
                *                                                       8AC07980
0100                    ORG     136                                     8AC07990
0088 0  61AF            LDX   1 -81                                     8AC08000
                *               PLACE CHECK SUM                         8AC08010
0089 0  6126            LDX   1 38                                      8AC08020
008A 00 850000D8  CHECK A     L1 RETAB                                  8AC08030
008C 0  71FF            MDX   1 -1                                      8AC08040
008D 0  70FC            MDX     CHECK                                   8AC08050
008E 0  F00D            EOR     FFFF                                    8AC08060
008F 0  800D            A       ADD                                     8AC08070
0090 00 D40000FE        STO   L RETAB+38                                8AC08080
0092 0  C805            LDD     QUEN                                    8AC08090
0093 00 DC00003E        STD   L GONE                                    8AC08100
0095 0  0804            XIO     REE                                     8AC08110
0096 00 4C00004C        BSC   L SAVE2                                   8AC08120
0098    0000            BSS   E 0                                       8AC08130
0098 00 4C00009E  QUEN  BSC   L KING                                    8AC08140
009A 0  0060      REE   DC      96                                      8AC08150
009B 0  1601            DC      AREA+READ+BIT15                         8AC08160
009C 0  FFFF      FFFF  DC      /FFFF                                   8AC08170
009D 0  0001      ADD   DC      /0001                                   8AC08180
009E 00 C4000060  KING  LD    L 96                                      8AC08190
00A0 00 94000051        S     L HB07                                    8AC08200
00A2 00 4C200048        BSC   L NOTRD,Z                                 8AC08210
00A4 00 4C000060        BSC   L 96                                      8AC08220
                ********************************************************* 8AC08230
                ********************************************************* 8AC08240
                *                                                       8AC08250
                * THE FOLLOWING PPOGRAM DATA IS LOC IN CARD 7           8AC08260
                *                                                       8AC08270
00A6                    ORG     96                                      8AC08280
                *               SET UP PUNCH TABLE                      8AC08290
0060 0  6204            LDX   2 4                                       8AC08300
0061 00 650000FF        LDX   L1 RETAB+39                               8AC08310
0063 0  6250            LDX   2 80                                      8AC08320
0064 0  10A0      CONTR SLT     32                                      8AC08330
0065 0  C100            LD    1 0                                       8AC08340
0066 0  1888            SRT     8                                       8AC08350
0067 0  1008      IT    SLA     8                                       8AC08360
0068 0  1800            RTE     16                                      8AC08370
0069 00 DE000086        STD   L2 DUTAB-2                                8AC08380
006B 0  71FF            MDX   1 -1                                      8AC08390
006C 0  72FE            MDX   2 -2                                      8AC08400
006D 0  70F6            MDX     CONTR                                   8AC08410
006E 00 740800D7        MDX   L DUTAB+79,8   SET PUNCH TERMINATOR       8AC08420
```



```
0070 0  0807            XIO     PUNCH                                   8AC08430
0071 0  C80A            LDD     VEX                                     8AC08440
0072 00 DC00003E        STD   L GONE                                    8AC08450
0074 00 4C00004C        BSC   L SAVE2                                   8AC08460
                ********************************************************* 8AC08470
                *                                                       8AC08480
0076 0  0803    FINA  XIO       FEED                                    8AC08490
0077 0  70D0            MDX     NOTRD                                   8AC08500
                ********************************************************* 8AC08510
                *                                                       8AC08520
0078    0000            BSS   E 0                                       8AC08530
0078 0  0000    PUNCH DC        0                                       8AC08540
0079 0  1402            DC      AREA+CTRL+BIT14                         8AC08550
007A 0  0088    FEED  DC        DUTAB                                   8AC08560
007B 0  1500            DC      AREA+WRITE                              8AC08570
007C 00 4C000076  VEX   BSC   L FINA                                    8AC08580
000D            QQQQ  EQU       /D          GO TO LOADER AT /D          8AC08590
70D7            NNNN  EQU       /70D7       FOR CARD LOADER AT /35
0813            WWWW  EQU       /0813       SET IN LOADER AT /04        8AC08610
7035            TTTT  EQU       /7000+RETUR-/4-1    THIS IS EQUAL TO    8AC08620
                *                           THE BRANCH FROM THE LOADER  8AC08630
                *                           TO RETUR IN THIS PROGRAM.   8AC08640
0016            CEOFF EQU       /16         LOC OF CE OFF IOCC IN LDR   8AC08650
0012            DSWLX EQU       /12         LOC OF DSW IN CARD LDR      8AC08660
                ********************************************************* 8AC08670
007E    007D            END     *-1                                     8AC08680
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1 CARD EDIT

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
ADD	009D	008F
AEOFF	0046	0038,0044,00AB,0085
ALS	0085	007B
AREA	1000	0070,007F,0089,008F,0098,0079,0078
AUX	0086	00AF
BIT10	0020	
BIT14	CJ02	0079
BIT15	0001	007F,0089,008F,0098
BIT8	0080	
BIT9	0040	
CANUM	00C1	0093
CEMOD	0000	0089
CEOFF	0016	0048
CEON	0088	0036,003A
CHECK	008A	008D
CONTR	0064	006D
CTRL	C400	0079
DATAR	008C	003E
DSWLX	0012	003B
DUTAB	0088	0054,007C,007E,00C0,0069,006E,007A
END	0080	C040
ERIC	0093	009A
FEED	007A	0076
FFFF	009C	008E
FINA	0076	007C
FIRSP	0073	0047,0069
GONE	003E	0078,0081,008A,008D,0083,00C0,0093,0072
HB06	0041	0072,007A
HB07	0051	0042,0078,00A0
HB10	0052	0068
HECK	00A0	00A3
HEX1	008A	008C
HEX11	0092	008A
HEX2	00C0	00B2
HTBX	C063	0060
HTBZ	0065	005D
HTOB	0058	
HTOB1	005F	0062
IT	0067	
KING	009E	0098
LH05	0043	0057,00B4
MATCH	009D	0097
NNNN	70D7	0046
NOA	0069	0045,0047,0079
NOTRD	0048	006F,0075,0087,0098,00A4,00A2,0077
PCAM	0036	0073,00AE
PCA27	0037	006C,0081
PLUM	0084	0076
PUCH	007E	0082
PUNCH	0078	0070
QQQQ	000D	0050
QUEN	0098	0092
READ	0600	007D,007F,00BF,0098
READA	00BE	0090
REE	009A	0095
REED	007C	0043
RETAB	00D8	0084,0095,00A0,00A8,00BE,008A,0090,0061
RETUR	003A	0085,00BF,007E
RHEM	00BB	00BE
RMAR	007B	0080
SAVE	006A	006A,006D,0070,0077
SAVE2	004C	003C,0083,0091,00B5,0096,0074
SAVE3	004E	003D
SENSE	0700	
SHERI	00B5	00AA

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1 CARD EDIT

STADD	00CF	00AC
TEMP	0038	0063,0064
TEMP1	0039	0053,0065
TTTT	7035	0088
UNIGE	00C8	009E,00A6
VEX	007C	0071
WRITE	0500	007B
WWWW	0813	0048

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX PROCESSOR

```
                        ABS                                                 8AC08700
028C                    ORG     /36                                         8AC08710
                    *                                                       8AC08720
                    ********************************************************8AC08730
                    *                                                       8AC08740
                    *                                                       8AC08750
                    *           PROCESSOR SKELETON PROG                     8AC08760
                    *           ***********************                     8AC08770
                    * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE           8AC08780
                    *                                                       8AC08790
                    *                                                       8AC08800
                    *                                                       8AC08810
                    *                                                       8AC08820
                    *           PURPOSE                                     8AC08830
                    *              THE PURPOSE OF THIS PROGRAM IS           8AC08840
                    *              TO PROVIDE A SKELETON PROGRAM            8AC08850
                    *              UPON WHICH THE CE CAN WRITE AN           8AC08860
                    *              AUX STORAGE PROGRAM.                     8AC08870
                    *                                                       8AC08880
                    *                                                       8AC08890
                    *           GENERAL INSTRUCTIONS                        8AC08900
                    *           CE SWITCH SETTINGS                          8AC08910
                    *              00001111  CE SERVICE STOP                8AC08920
                    *              11111111  TERMINATE PROGRAM              8AC08930
                    *              ALL OTHER COMBINATIONS ARE STORED        8AC08940
                    *              * AT THE LOCATION  CESW  FOR             8AC08950
                    *              * POSSIBLE USE BY THE CE TO              8AC08960
                    *              * CONTROL HIS PROGRAM                    8AC08970
                    *                                                       8AC08980
                    *                                                       8AC08990
                    ********************************************************8AC09000
                    *                                                       8AC09010
                    *                                                       8AC09020
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC09030
                    *           CORRECTIONS FOR THE FOLLOWING 27    *       8AC09040
                    *           WORDS MUST BE MADE IN THE CARD      *       8AC09050
                    *           NUMBERED X OF THIS AUX PROGRAMS     *       8AC09060
                    *           7 CARD OBJECT DECK.                 *       8AC09070
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC09080
                    *                                                       8AC09090
                    *                                                       8AC09100
                    *                                                       8AC09110
                    *           AUX PROG ENTRY POINTS                       8AC09120
                    *           *********************                       8AC09130
                    *                                                       8AC09140
                    *           1ST PASS ENTRY                              8AC09150
                    *           **************                              8AC09160
                    *                                                       8AC09170
0036 0  C01B                    LD      DSW52       RESTORE LOC NICE        8AC09180
0037 0  D0FD                    STO     /35         * IN AUX LOADER         8AC09190
                    *                                                       8AC09200
0038 0  C01D                    LD      CEOFF       PLACE BRANCH            8AC09210
0039 0  D0CA                    STO     /04         * TO RETUR LABEL        8AC09220
                    *                                                       8AC09230
                    *           ALL BUT 1ST PASS ENTRY POINT                8AC09240
                    *           ****************************                8AC09250
                    RETUR NOP                   NO OP INSTRUCTION CODE      8AC09260
003A 0  100C            STX   2 SAVE2+1         SAVE INDEX REGISTER 2       8AC09270
003B 0  6A21            STX   3 SAVE3+1         SAVE INDEX REGISTER 3       8AC09280
003C 0  6822            NOP                     NO OP INSTRUCTION CODE      8AC09290
003D 0  1000            NOP                     NO OP INSTRUCTION CODE      8AC09300
003E 0  1000            XIO     SENBI           SENSE CE PROG SW TO ACCUM   8AC09310
003F 0  0810            AND     SENBI           BLOCK OUT PROG SEL SW.      8AC09320
0040 0  E00F            STO     CESW            SAVE CE PROG SW SETTINGS    8AC09330
0041 0  D020            EOR     SENBI                                       8AC09340
0042 0  F00D            BSC  L  NOTRD,+-        BR TERMINATE PROGRAM        8AC09350
0043 00 4C180058        EOR     CEON                                        8AC09360
0045 0  F00E            BSC  L  SAVE2,+-        BR SERVICE STOP             8AC09370
```


AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX PROCESSOR

```
0048 00 CC000046            LDD  L  TERM                                    8AC09380
004A 00 DC0000FE            STD  L  /00FE       SET TERMINATOR BR AT END    8AC09390
                    *                           * OF AUX CORE AS A SAFETY   8AC09400
                    *                           * PRECAUTION                8AC09410
                    *                                                       8AC09420
004C 00 4C000067            BSC  L  CEGO        BR TO DO IT YOURSELF PROG   8AC09430
004E 00 4C000058    TERM    BSC  L  NOTRD       TERMINATOR BRANCH           8AC09440
                    ********************************************************8AC09450
                    *                                                       8AC09460
                    *           CONSTANTS AND/OR IOCC WORDS                 8AC09470
0050    0000                BSS  E  0                                       8AC09480
0050 0  00FF        SENBI   DC      /00FF       TERMINATOR CONSTANT         8AC09490
                    *                                                       8AC09500
                    *                                                       8AC09510
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC09520
                    *           CORRECTIONS FOR THE FOLLOWING 27    *       8AC09530
                    *           WORDS MUST BE MADE IN THE CARD      *       8AC09540
                    *           NUMBERED 0 OF THIS AUX PROGRAMS     *       8AC09550
                    *           7 CARD OBJECT DECK.                 *       8AC09560
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC09570
                    *                                                       8AC09580
                    *                                                       8AC09590
0051 0  0760                DC      /0760       SENSE CE SWITCHES           8AC09600
0052 0  7007        DSW52   DC      NNNN                                    8AC09610
0053 0  7004                WDX     NOTRD       THIS LOC IS NOT USED        8AC09620
0054 0  00F0        CEON    DC      /00F0       CE SERVICE STOP CONST       8AC09630
0055 0  7002                WDX     NOTRD       THIS LOC IS NOT USED        8AC09640
0056 0  7035        CEOFF   DC      TTTT                                    8AC09650
0057 0  7000                WDX     NOTRD       THIS LOC IS NOT USED        8AC09660
                    ********************************************************8AC09670
                    *                                                       8AC09680
                    *           EXIT POINTS TO AUX LOADER                   8AC09690
                    *           *************************                   8AC09700
                    *                                                       8AC09710
                    *           TERMINATE EXIT POINT                        8AC09720
0058 00 65000813    NOTRD   LDX  L1 WWWW                                    8AC09730
005A 0  69A9                STX   1 /04                                     8AC09740
005B 0  1000                NOP             NO OP INSTRUCTION CODE          8AC09750
                    *                                                       8AC09760
                    *           NORMAL EXIT POINT                           8AC09770
005C 00 66000000    SAVE2   LDX  L2 0                                       8AC09780
005E 00 67000000    SAVE3   LDX  L3 0                                       8AC09790
                    *                                                       8AC09800
0060 0  70AC                WDX     QQQQ                                    8AC09810
                    ********************************************************8AC09820
                    ********************************************************8AC09830
                    ********************************************************8AC09840
                    *                                                       8AC09850
0061 0  70F6                WDX     NOTRD       THIS LOC IS NOT USED        8AC09860
0062    0000                BSS  E  0                                       8AC09870
0062 0  0000        CESW    DC      0           CE PROGRAM SW SETTING       8AC09880
0063 0  70F4                WDX     NOTRD       THIS LOC IS NOT USED        8AC09890
0064 0  70F3                WDX     NOTRD       THIS LOC IS NOT USED        8AC09900
0065 0  70F2                WDX     NOTRD       THIS LOC IS NOT USED        8AC09910
0066 0  70F1                WDX     NOTRD       THIS LOC IS NOT USED        8AC09920
                    ********************************************************8AC09930
                    *                                                       8AC09940
                    *                                                       8AC09950
                    *                                                       8AC09960
                    *           THIS IS THE STARTING POINT OF YOUR          8AC09970
                    *           PROGRAM.                                    8AC09980
                    *                                                       8AC09990
                    *                                                       8AC10000
                    *                                                       8AC10010
                    *                                                       8AC10020
0067 0  70F0        CEGO    WDX     NOTRD       1ST LOC OF YOUR PROGRAM     8AC10030
                    *           BRANCH TO LOCATION  SAVE2   WHEN            8AC10040
                    *           EXITING FROM YOUR PROGRAM.                  8AC10050
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX PROCESSOR

```
0068 0 70EF          MDX   NOTRD                                  8AC10060
0069 0 70EE          MDX   NOTRD                                  8AC10070
006A 0 70ED          MDX   NOTRD                                  8AC10080
006B 0 70EC          MDX   NOTRD                                  8AC10090
                     *                                            8AC10100
                     *                                            8AC10110
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC10120
                     *          CORRECTIONS FOR THE FOLLOWING 27  * 8AC10130
                     *          WORDS MUST BE MADE IN THE CARD    * 8AC10140
                     *          NUMBERED 1 OF THIS AUX PROGRAMS   * 8AC10150
                     *          7 CARD OBJECT DECK.               * 8AC10160
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC10170
                     *                                            8AC10180
                     *                                            8AC10190
006C 0 70EB          MDX   NOTRD                                  8AC10200
006D 0 70EA          MDX   NOTRD                                  8AC10210
006E 0 70E9          MDX   NOTRD                                  8AC10220
006F 0 70E8          MDX   NOTRD                                  8AC10230
0070 0 70E7          MDX   NOTRD                                  8AC10240
0071 0 70E6          MDX   NOTRD                                  8AC10250
0072 0 70E5          MDX   NOTRD                                  8AC10260
0073 0 70E4          MDX   NOTRD                                  8AC10270
0074 0 70E3          MDX   NOTRD                                  8AC10280
0075 0 70E2          MDX   NOTRD                                  8AC10290
0076 0 70E1          MDX   NOTRD                                  8AC10300
0077 0 70E0          MDX   NOTRD                                  8AC10310
0078 0 70DF          MDX   NOTRD                                  8AC10320
0079 0 70DE          MDX   NOTRD                                  8AC10330
007A 0 70DD          MDX   NOTRD                                  8AC10340
007B 0 70DC          MDX   NOTRD                                  8AC10350
007C 0 70DB          MDX   NOTRD                                  8AC10360
007D 0 70DA          MDX   NOTRD                                  8AC10370
007E 0 70D9          MDX   NOTRD                                  8AC10380
007F 0 70D8          MDX   NOTRD                                  8AC10390
0080 0 70D7          MDX   NOTRD                                  8AC10400
0081 0 70D6          MDX   NOTRD                                  8AC10410
0082 0 70D5          MDX   NOTRD                                  8AC10420
0083 0 70D4          MDX   NOTRD                                  8AC10430
0084 0 70D3          MDX   NOTRD                                  8AC10440
0085 0 70D2          MDX   NOTRD                                  8AC10450
0086 0 70D1          MDX   NOTRD                                  8AC10460
                     *                                            8AC10470
                     *                                            8AC10480
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC10490
                     *          CORRECTIONS FOR THE FOLLOWING 27  * 8AC10500
                     *          WORDS MUST BE MADE IN THE CARD    * 8AC10510
                     *          NUMBERED 2 OF THIS AUX PROGRAMS   * 8AC10520
                     *          7 CARD OBJECT DECK.               * 8AC10530
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC10540
                     *                                            8AC10550
                     *                                            8AC10560
0087 0 70D0          MDX   NOTRD                                  8AC10570
0088 0 70CF          MDX   NOTRD                                  8AC10580
0089 0 70CE          MDX   NOTRD                                  8AC10590
008A 0 70CD          MDX   NOTRD                                  8AC10600
008B 0 70CC          MDX   NOTRD                                  8AC10610
008C 0 70CB          MDX   NOTRD                                  8AC10620
008D 0 70CA          MDX   NOTRD                                  8AC10630
008E 0 70C9          MDX   NOTRD                                  8AC10640
008F 0 70C8          MDX   NOTRD                                  8AC10650
0090 0 70C7          MDX   NOTRD                                  8AC10660
0091 0 70C6          MDX   NOTRD                                  8AC10670
0092 0 70C5          MDX   NOTRD                                  8AC10680
0093 0 70C4          MDX   NOTRD                                  8AC10690
0094 0 70C3          MDX   NOTRD                                  8AC10700
0095 0 70C2          MDX   NOTRD                                  8AC10710
0096 0 70C1          MDX   NOTRD                                  8AC10720
0097 0 70C0          MDX   NOTRD                                  8AC10730
```


AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX PROCESSOR

```
0098 0 708F          MDX   NOTRD                                  8AC10740
0099 0 708E          MDX   NOTRD                                  8AC10750
009A 0 708D          MDX   NOTRD                                  8AC10760
009B 0 708C          MDX   NOTRD                                  8AC10770
009C 0 708B          MDX   NOTRD                                  8AC10780
009D 0 708A          MDX   NOTRD                                  8AC10790
009E 0 7089          MDX   NOTRD                                  8AC10800
009F 0 7088          MDX   NOTRD                                  8AC10810
00A0 0 7087          MDX   NOTRD                                  8AC10820
00A1 0 7086          MDX   NOTRD                                  8AC10830
                     *                                            8AC10840
                     *                                            8AC10850
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC10860
                     *          CORRECTIONS FOR THE FOLLOWING 27  * 8AC10870
                     *          WORDS MUST BE MADE IN THE CARD    * 8AC10880
                     *          NUMBERED 3 OF THIS AUX PROGRAMS   * 8AC10890
                     *          7 CARD OBJECT DECK.               * 8AC10900
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC10910
                     *                                            8AC10920
                     *                                            8AC10930
00A2 0 7085          MDX   NOTRD                                  8AC10940
00A3 0 7084          MDX   NOTRD                                  8AC10950
00A4 0 7083          MDX   NOTRD                                  8AC10960
00A5 0 7082          MDX   NOTRD                                  8AC10970
00A6 0 7081          MDX   NOTRD                                  8AC10980
00A7 0 7080          MDX   NOTRD                                  8AC10990
00A8 0 70AF          MDX   NOTRD                                  8AC11000
00A9 0 70AE          MDX   NOTRD                                  8AC11010
00AA 0 70AD          MDX   NOTRD                                  8AC11020
00AB 0 70AC          MDX   NOTRD                                  8AC11030
00AC 0 70AB          MDX   NOTRD                                  8AC11040
00AD 0 70AA          MDX   NOTRD                                  8AC11050
00AE 0 70A9          MDX   NOTRD                                  8AC11060
00AF 0 70A8          MDX   NOTRD                                  8AC11070
00B0 0 70A7          MDX   NOTRD                                  8AC11080
00B1 0 70A6          MDX   NOTRD                                  8AC11090
00B2 0 70A5          MDX   NOTRD                                  8AC11100
00B3 0 70A4          MDX   NOTRD                                  8AC11110
00B4 0 70A3          MDX   NOTRD                                  8AC11120
00B5 0 70A2          MDX   NOTRD                                  8AC11130
00B6 0 70A1          MDX   NOTRD                                  8AC11140
00B7 0 70A0          MDX   NOTRD                                  8AC11150
00B8 0 709F          MDX   NOTRD                                  8AC11160
00B9 0 709E          MDX   NOTRD                                  8AC11170
00BA 0 709D          MDX   NOTRD                                  8AC11180
00BB 0 709C          MDX   NOTRD                                  8AC11190
00BC 0 709B          MDX   NOTRD                                  8AC11200
                     *                                            8AC11210
                     *                                            8AC11220
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC11230
                     *          CORRECTIONS FOR THE FOLLOWING 27  * 8AC11240
                     *          WORDS MUST BE MADE IN THE CARD    * 8AC11250
                     *          NUMBERED 4 OF THIS AUX PROGRAMS   * 8AC11260
                     *          7 CARD OBJECT DECK.               * 8AC11270
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC11280
                     *                                            8AC11290
                     *                                            8AC11300
00BD 0 709A          MDX   NOTRD                                  8AC11310
00BE 0 703F          MDX   /00FE                                  8AC11320
00BF 0 703E          MDX   /00FE                                  8AC11330
00C0 0 703D          MDX   /00FE                                  8AC11340
00C1 0 703C          MDX   /00FE                                  8AC11350
00C2 0 703B          MDX   /00FE                                  8AC11360
00C3 0 703A          MDX   /00FE                                  8AC11370
00C4 0 7039          MDX   /00FE                                  8AC11380
00C5 0 7038          MDX   /00FE                                  8AC11390
00C6 0 7037          MDX   /00FE                                  8AC11400
00C7 0 7036          MDX   /00FE                                  8AC11410
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00C8 0  7035            MDX     /00FE                                   8AC11420
00C9 0  7034            MDX     /00FE                                   8AC11430
00CA 0  7033            MDX     /00FE                                   8AC11440
00CB 0  7032            MDX     /00FE                                   8AC11450
00CC 0  7031            MDX     /00FE                                   8AC11460
00CD 0  7030            MDX     /00FE                                   8AC11470
00CE 0  702F            MDX     /00FE                                   8AC11480
00CF 0  702E            MDX     /00FE                                   8AC11490
00D0 0  702D            MDX     /00FE                                   8AC11500
00D1 0  702C            MDX     /00FE                                   8AC11510
00D2 0  7028            MDX     /00FE                                   8AC11520
00D3 0  702A            MDX     /00FE                                   8AC11530
00D4 0  7029            MDX     /00FE                                   8AC11540
00D5 0  7028            MDX     /00FE                                   8AC11550
00D6 0  7027            MDX     /00FE                                   8AC11560
00D7 0  7026            MDX     /00FE                                   8AC11570
                *                                                       8AC11580
                *                                                       8AC11590
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC11600
                *           CORRECTIONS FOR THE FOLLOWING 38    *       8AC11610
                *           WORDS MUST BE MADE IN THE CARD      *       8AC11620
                *           NUMBERED 5 OF THIS AUX PROGRAMS     *       8AC11630
                *           7 CARD OBJECT DECK.                 *       8AC11640
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC11650
                *                                                       8AC11660
                *                                                       8AC11670
00D8 0  7025            MDX     /00FE                                   8AC11680
00D9 0  7024            MDX     /00FE                                   8AC11690
00DA 0  7023            MDX     /00FE                                   8AC11700
00DB 0  7022            MDX     /00FE                                   8AC11710
00DC 0  7021            MDX     /00FE                                   8AC11720
00DD 0  7020            MDX     /00FE                                   8AC11730
00DE 0  701F            MDX     /00FE                                   8AC11740
00DF 0  701E            MDX     /00FE                                   8AC11750
00E0 0  701D            MDX     /00FE                                   8AC11760
00E1 0  701C            MDX     /00FE                                   8AC11770
00E2 0  701B            MDX     /00FE                                   8AC11780
00E3 0  701A            MDX     /00FE                                   8AC11790
00E4 0  7019            MDX     /00FE                                   8AC11800
00E5 0  7018            MDX     /00FE                                   8AC11810
00E6 0  7017            MDX     /00FE                                   8AC11820
00E7 0  7016            MDX     /00FE                                   8AC11830
00E8 0  7015            MDX     /00FE                                   8AC11840
00E9 0  7014            MDX     /00FE                                   8AC11850
00EA 0  7013            MDX     /00FE                                   8AC11860
00EB 0  7012            MDX     /00FE                                   8AC11870
00EC 0  7011            MDX     /00FE                                   8AC11880
00ED 0  7010            MDX     /00FE                                   8AC11890
00EE 0  700F            MDX     /00FE                                   8AC11900
00EF 0  700E            MDX     /00FE                                   8AC11910
00F0 0  700D            MDX     /00FE                                   8AC11920
00F1 0  700C            MDX     /00FE                                   8AC11930
00F2 0  700B            MDX     /00FE                                   8AC11940
00F3 0  700A            MDX     /00FE                                   8AC11950
00F4 0  7009            MDX     /00FE                                   8AC11960
00F5 0  7008            MDX     /00FE                                   8AC11970
00F6 0  7007            MDX     /00FE                                   8AC11980
00F7 0  7006            MDX     /00FE                                   8AC11990
00F8 0  7005            MDX     /00FE                                   8AC12000
00F9 0  7004            MDX     /00FE                                   8AC12010
00FA 0  7003            MDX     /00FE                                   8AC12020
00FB 0  7002            MDX     /00FE                                   8AC12030
00FC 0  7001            MDX     /00FE                                   8AC12040
00FD 0  7000            MDX     /00FE                                   8AC12050
                ********************************************************8AC12060
                *                                                       8AC12070
000D            QQQQ    EQU     /D          GO TO LOADER AT /D          8AC12080
7007            NNNN    EQU     /7007       FOR CARD LOADER AT /35      8AC12090
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```
0813            WWWW    EQU     /0813       SET IN LOADER AT /04        8AC12100
7035            TTTT    EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO    8AC12110
                *                           THE BRANCH FROM THE LOADER  8AC12120
                *                           TO RETUR IN THIS PROGRAM.   8AC12130
                ********************************************************8AC12140
00FE    00FD            END     *-1         END CARD NEVER USED         8AC12150
```

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
CEGO	0067	004C
CEOFF	0056	0038
CEON	0054	0045
CESW	0062	0041
DSW52	0052	0036
NNNN	70D7	0052
NOTRD	0058	0043,004E,0053,0055,0057,0061,0063,0064,0065,0066, 0067,0068,0069,006A,006B,006C,006D,006E,006F,0070, 0071,0072,0073,0074,0075,0076,0077,0078,0079,007A, 007B,007C,007D,007E,007F,0080,0081,0082,0083,0084, 0085,0086,0087,0088,0089,008A,008B,008C,008D,008E, 008F,0090,0091,0092,0093,0094,0095,0096,0097,0098, 0099,009A,009B,009C,009D,009E,009F,00A0,00A1,00A2, 00A3,00A4,00A5,00A6,00A7,00A8,00A9,00AA,00AB,00AC, 00AD,00AE,00AF,00B0,00B1,00B2,00B3,00B4,00B5,00B6, 00B7,00B8,00B9,00BA,00BB,00BC,00BD
QQQQ	000D	0060
RETUR	003A	00FE
SAVE2	005C	003B,0046
SAVE3	005E	003C
SENBI	0050	003F,0040,0042
TERM	004E	0048
TTTT	7035	0056
WWWW	0813	0058


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                ABS
028C            ORG     /36                                          8AC12160
*                                                                    8AC12170
*****************************************************************  8AC12180
0800 AREA  EQU     /0800       1ST 1053 AREA CODE                    8AC12190
*          IF THIS PROG IS TO BE USED FOR A MACH                     8AC12200
* WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH                      8AC12210
* REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST                   8AC12220
* BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A                     8AC12230
* MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG                      8AC12240
* GENERATOR WRITE-UP FOR PROCEDURE.                                  8AC12250
*                                                                    8AC12260
0002 MODIF EQU     /0002       1ST 1053 MODIFIER BIT                 8AC12270
*****************************************************************  8AC12280
*                                                                    8AC12290
*                                                                    8AC12300
*                1ST 1053 SKELETON PROGRAM                           8AC12310
*                (SEE AUX CE PROG GENERATOR                          8AC12320
*                * WRITE-UP FOR USE PROCEDURE)                       8AC12330
*                ****************************                        8AC12340
* THIS PROG CAN NOT BE LOADED FROM PAPER TAPE                        8AC12350
*                                                                    8AC12360
*                                                                    8AC12370
*                                                                    8AC12380
*                                                                    8AC12390
*                PURPOSE                                             8AC12400
*                   THE PURPOSE OF THIS PROGRAM IS                   8AC12410
*                   TO PROVIDE A SKELETON PROGRAM                    8AC12420
*                   UPON WHICH THE CE CAN WRITE AN                   8AC12430
*                   AUX STORAGE PROGRAM.                             8AC12440
*                                                                    8AC12450
*                                                                    8AC12460
*                GENERAL INSTRUCTIONS                                8AC12470
*                CE SWITCH SETTINGS                                  8AC12480
*                   00001111  CE SERVICE STOP                        8AC12490
*                   11111111  TERMINATE PROGRAM                      8AC12500
*                   ALL OTHER COMBINATIONS ARE STORED                8AC12510
*                   * AT THE LOCATION  CESW  FOR                     8AC12520
*                   * POSSIBLE USE BY THE CE TO                      8AC12530
*                   * CONTROL HIS PROGRAM                            8AC12540
*                                                                    8AC12550
*                                                                    8AC12560
*************************************************                    8AC12570
*                                                                    8AC12580
*                                                                    8AC12590
*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC12600
*                CORRECTIONS FOR THE FOLLOWING 27   *                8AC12610
*                WORDS MUST BE MADE IN THE CARD     *                8AC12620
*                NUMBERED X OF THIS AUX PROGRAMS    *                8AC12630
*                7 CARD OBJECT DECK.                *                8AC12640
*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC12650
*                                                                    8AC12660
*                                                                    8AC12670
*                AUX PROG ENTRY POINTS                               8AC12680
*                *********************                               8AC12690
*                                                                    8AC127C0
*                1ST PASS ENTRY                                      8AC12710
*                **************                                      8AC12720
*                                                                    8AC12730
0036 0 C01B         LD      DSW52       RESTORE LOC NICE            8AC12740
0037 0 D0FD         STO     /35         * IN AUX LOADER             8AC12750
*                                                                    8AC12760
0038 0 C01D         LD      CEOFF       PLACE BRANCH                8AC12770
0039 0 D0CA         STO     /04         * TO RETUR LABEL            8AC12780
*                                                                    8AC12790
*                ALL BUT 1ST PASS ENTRY POINT                        8AC12800
*                ***************************                         8AC12810
                                                                     8AC12820
                                                                     8AC12830
```

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003A 0  0819        RETUR XIO     CEON      SET DEVICE IN CE MODE          8AC12840
003B 0  6A21              STX   2 SAVE2+1    SAVE INDEX REGISTER 2          8AC12850
003C 0  6822              STX   3 SAVE3+1    SAVE INDEX REGISTER 3          8AC12860
003D 0  0814              XIO     DSW52      SENSE DEVICE STATUS            8AC12870
003E 0  D024              STO     STATU      SAVE DEVICE STATUS             8AC12880
003F 0  0810              XIO     SENBI      SENSE CE PROG SW TO ACCUM      8AC12890
0040 0  E00F              AND     SENBI      BLOCK OUT PROG SEL SW          8AC12900
0041 0  D020              STO     CESW       SAVE CE PROG SW SETTINGS       8AC12910
0042 0  F00D              EOR     SENBI                                     8AC12920
0043 00 4C180058          BSC   L NOTRD,+-   BR TERMINATE PROGRAM           8AC12930
0045 0  F00E              EOR     CEON                                      8AC12940
0046 00 4C18005C          BSC   L SAVE2,+-    BR SERVICE STOP              8AC12950
0048 00 CC00004E          LDD   L TERM                                      8AC12960
004A 00 DC0000FE          STD   L /00FE      SET TERMINATOR BR AT END       8AC12970
                                             * OF AUX CORE AS A SAFETY      8AC12980
                                             * PRECAUTION                   8AC12990
                                                                           8AC13000
004C 00 4C000067          BSC   L CEGO       BR TO DO IT YOURSELF PROG      8AC13010
004E 00 4C000058    TERM  BSC   L NOTRD      TERMINATOR BRANCH              8AC13020
                    ********************************************************8AC13030
                                                                           8AC13040
                                CONSTANTS AND/OR IOCC WORDS                8AC13050
                                                                           8AC13060
0050    0000              BSS   E 0                                        8AC13070
0050 0  00FF        SENBI DC      /00FF      TERMINATOR CONSTANT            8AC13080
                                                                           8AC13090
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I     8AC13100
                                CORRECTIONS FOR THE FOLLOWING 27   *       8AC13110
                                WORDS MUST BE MADE IN THE CARD     *       8AC13120
                                NUMBERED 0 OF THIS AUX PROGRAMS    *       8AC13130
                                7 CARD OBJECT DECK.                *       8AC13140
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I     8AC13150
                                                                           8AC13160
                                                                           8AC13170
0051 0  0760              DC      /0760      SENSE CE SWITCHES              8AC13180
0052 0  70D7        DSW52 DC      NNNN                                      8AC13190
0053 0  0F03              DC      /0701+AREA+MODIF RESET DEVICE STATUS       8AC13200
0054 0  00F0        CEON  DC      /00F0      CE SERVICE STOP CONST          8AC13210
0055 0  0803              DC      /0001+AREA+MODIF CE ON WORD                8AC13220
0056 0  7035        CEOFF DC      TTTT                                      8AC13230
0057 0  0802              DC      /0000+ARLA+MODIF CE OFF WORD               8AC13240
                    ********************************************           8AC13250
                                                                           8AC13260
                                EXIT POINTS TO AUX LOADER                  8AC13270
                                *************************                  8AC13280
                                                                           8AC13290
                                TERMINATE EXIT POINT                       8AC13300
0058 00 65000813    NOTRD LDX   L1 WWWW                                    8AC13310
005A 0  69A9              STX     1 /04                                    8AC13320
005B 0  08FA              XIO     CEOFF      REMOVE DEVICE FROM CE MODE     8AC13330
                                                                           8AC13340
                                NORMAL EXIT POINT                          8AC13350
005C 00 66000000    SAVE2 LDX   L2 0                                       8AC13360
005E 00 67000000    SAVE3 LDX   L3 0                                       8AC13370
                                                                           8AC13380
0060 0  70AC              MDX     QQQQ                                     8AC13390
                    ********************************************           8AC13400
                    ************************************************       8AC13410
                    ************************************************       8AC13420
                                                                           8AC13430
                                THE FOLLOWING CONSTANTS AND IOCC           8AC13440
                                WORDS HAS BEEN PLACED HERE TO AID          8AC13450
                                THE CE IN HIS PROGRAMMING EFFORT.          8AC13460
                                                                           8AC13470
0061 0  70F6              MDX     NOTRD      THIS LOC IS NOT USED           8AC13480
0062    0000              BSS   E 0                                        8AC13490
0062 0  0000        CESW  DC      0          CE PROGRAM SW SETTING          8AC13500
0063 0  0000        STATU DC      0          DEVICE STATUS WORD             8AC13510
```



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                                                                           8AC13520
                                                                           8AC13530
0064 0  0066        WRITE DC      OUTWD      REFERS TO OUTPUT CHAR.         8AC13540
0065 0  0902              DC      /0100+AREA+MODIF IOCC WRITE WORD           8AC13550
                                                                           8AC13560
0066 0  0000        OUTWD DC      0          PLACE OUTPUT CHAR. HERE        8AC13570
                    ********************************************           8AC13580
                                                                           8AC13590
                                                                           8AC13600
                                                                           8AC13610
                                THIS IS THE STARTING POINT OF YOUR         8AC13620
                                PROGRAM.                                   8AC13630
                                                                           8AC13640
                                                                           8AC13650
                                                                           8AC13660
0067 0  70F0        CEGO  MDX     NOTRD      1ST LOC OF YOUR PROGRAM        8AC13670
                                BRANCH TO LOCATION  SAVE2   WHEN           8AC13680
                                EXITING FROM YOUR PROGRAM.                 8AC13690
                                                                           8AC13700
0068 0  70EF              MDX     NOTRD                                    8AC13710
0069 0  70EE              MDX     NOTRD                                    8AC13720
006A 0  70ED              MDX     NOTRD                                    8AC13730
006B 0  70EC              MDX     NOTRD                                    8AC13740
                                                                           8AC13750
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I     8AC13760
                                CORRECTIONS FOR THE FOLLOWING 27   *       8AC13770
                                WORDS MUST BE MADE IN THE CARD     *       8AC13780
                                NUMBERED 1 OF THIS AUX PROGRAMS    *       8AC13790
                                7 CARD OBJECT DECK.                *       8AC13800
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I     8AC13810
                                                                           8AC13820
                                                                           8AC13830
006C 0  70EB              MDX     NOTRD                                    8AC13840
006D 0  70EA              MDX     NOTRD                                    8AC13850
006E 0  70E9              MDX     NOTRD                                    8AC13860
006F 0  70E8              MDX     NOTRD                                    8AC13870
0070 0  70E7              MDX     NOTRD                                    8AC13880
0071 0  70E6              MDX     NOTRD                                    8AC13890
0072 0  70E5              MDX     NOTRD                                    8AC13900
0073 0  70E4              MDX     NOTRD                                    8AC13910
0074 0  70E3              MDX     NOTRD                                    8AC13920
0075 0  70E2              MDX     NOTRD                                    8AC13930
0076 0  70E1              MDX     NOTRD                                    8AC13940
0077 0  70E0              MDX     NOTRD                                    8AC13950
0078 0  70DF              MDX     NOTRD                                    8AC13960
0079 0  70DE              MDX     NOTRD                                    8AC13970
007A 0  70DD              MDX     NOTRD                                    8AC13980
007B 0  70DC              MDX     NOTRD                                    8AC13990
007C 0  70DB              MDX     NOTRD                                    8AC14000
007D 0  70DA              MDX     NOTRD                                    8AC14010
007E 0  70D9              MDX     NOTRD                                    8AC14020
007F 0  70D8              MDX     NOTRD                                    8AC14030
0080 0  70D7              MDX     NOTRD                                    8AC14040
0081 0  70D6              MDX     NOTRD                                    8AC14050
0082 0  70D5              MDX     NOTRD                                    8AC14060
0083 0  70D4              MDX     NOTRD                                    8AC14070
0084 0  70D3              MDX     NOTRD                                    8AC14080
0085 0  70D2              MDX     NOTRD                                    8AC14090
0086 0  70D1              MDX     NOTRD                                    8AC14100
                                                                           8AC14110
                                                                           8AC14120
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I     8AC14130
                                CORRECTIONS FOR THE FOLLOWING 27   *       8AC14140
                                WORDS MUST BE MADE IN THE CARD     *       8AC14150
                                NUMBERED 2 OF THIS AUX PROGRAMS    *       8AC14160
                                7 CARD OBJECT DECK.                *       8AC14170
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I     8AC14180
                                                                           8AC14190
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                        *                                                       8AC14200
0087 0  70D0            MDX     NOTRD                                           8AC14210
0088 0  70CF            MDX     NOTRD                                           8AC14220
0089 0  70CE            MDX     NOTRD                                           8AC14230
008A 0  70CD            MDX     NOTRD                                           8AC14240
008B 0  70CC            MDX     NOTRD                                           8AC14250
008C 0  70CB            MDX     NOTRD                                           8AC14260
008D 0  70CA            MDX     NOTRD                                           8AC14270
008E 0  70C9            MDX     NOTRD                                           8AC14280
008F 0  70C8            MDX     NOTRD                                           8AC14290
0090 0  70C7            MDX     NOTRD                                           8AC14300
0091 0  70C6            MDX     NOTRD                                           8AC14310
0092 0  70C5            MDX     NOTRD                                           8AC14320
0093 0  70C4            MDX     NOTRD                                           8AC14330
0094 0  70C3            MDX     NOTRD                                           8AC14340
0095 0  70C2            MDX     NOTRD                                           8AC14350
0096 0  70C1            MDX     NOTRD                                           8AC14360
0097 0  70C0            MDX     NOTRD                                           8AC14370
0098 0  709F            MDX     NOTRD                                           8AC14380
0099 0  709E            MDX     NOTRD                                           8AC14390
009A 0  709D            MDX     NOTRD                                           8AC14400
009B 0  709C            MDX     NOTRD                                           8AC14410
009C 0  709B            MDX     NOTRD                                           8AC14420
009D 0  709A            MDX     NOTRD                                           8AC14430
009E 0  7099            MDX     NOTRD                                           8AC14440
009F 0  7098            MDX     NOTRD                                           8AC14450
00A0 0  7097            MDX     NOTRD                                           8AC14460
00A1 0  7096            MDX     NOTRD                                           8AC14470
                        *                                                       8AC14480
                        *                                                       8AC14490
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC14500
                        *           CORRECTIONS FOR THE FOLLOWING 27    *       8AC14510
                        *           WORDS MUST BE MADE IN THE CARD      *       8AC14520
                        *           NUMBERED 3 OF THIS AUX PROGRAMS     *       8AC14530
                        *           7 CARD OBJECT DECK.                 *       8AC14540
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC14550
                        *                                                       8AC14560
                        *                                                       8AC14570
00A2 0  7095            MDX     NOTRD                                           8AC14580
00A3 0  7094            MDX     NOTRD                                           8AC14590
00A4 0  7093            MDX     NOTRD                                           8AC14600
00A5 0  7092            MDX     NOTRD                                           8AC14610
00A6 0  7091            MDX     NOTRD                                           8AC14620
00A7 0  7090            MDX     NOTRD                                           8AC14630
00A8 0  70AF            MDX     NOTRD                                           8AC14640
00A9 0  70AE            MDX     NOTRD                                           8AC14650
00AA 0  70AD            MDX     NOTRD                                           8AC14660
00AB 0  70AC            MDX     NOTRD                                           8AC14670
00AC 0  70AB            MDX     NOTRD                                           8AC14680
00AD 0  70AA            MDX     NOTRD                                           8AC14690
00AE 0  70A9            MDX     NOTRD                                           8AC14700
00AF 0  70A8            MDX     NOTRD                                           8AC14710
00B0 0  70A7            MDX     NOTRD                                           8AC14720
00B1 0  70A6            MDX     NOTRD                                           8AC14730
00B2 0  70A5            MDX     NOTRD                                           8AC14740
00B3 0  70A4            MDX     NOTRD                                           8AC14750
00B4 0  70A3            MDX     NOTRD                                           8AC14760
00B5 0  70A2            MDX     NOTRD                                           8AC14770
00B6 0  70A1            MDX     NOTRD                                           8AC14780
00B7 0  70A0            MDX     NOTRD                                           8AC14790
00B8 0  709F            MDX     NOTRD                                           8AC14800
00B9 0  709E            MDX     NOTRD                                           8AC14810
00BA 0  709D            MDX     NOTRD                                           8AC14820
00BB 0  709C            MDX     NOTRD                                           8AC14830
00BC 0  709B            MDX     NOTRD                                           8AC14840
                        *                                                       8AC14850
                        *                                                       8AC14860
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC14870
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                        *           CORRECTIONS FOR THE FOLLOWING 27    *       8AC14880
                        *           WORDS MUST BE MADE IN THE CARD      *       8AC14890
                        *           NUMBERED 4 OF THIS AUX PROGRAMS     *       8AC14900
                        *           7 CARD OBJECT DECK.                 *       8AC14910
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC14920
                        *                                                       8AC14930
                        *                                                       8AC14940
00BD 0  709A            MDX     NOTRD                                           8AC14950
00BE 0  703F            MDX     /00FE                                           8AC14960
00BF 0  703E            MDX     /00FE                                           8AC14970
00C0 0  703D            MDX     /00FE                                           8AC14980
00C1 0  703C            MDX     /00FE                                           8AC14990
00C2 0  703B            MDX     /00FE                                           8AC15000
00C3 0  703A            MDX     /00FE                                           8AC15010
00C4 0  7039            MDX     /00FE                                           8AC15020
00C5 0  7038            MDX     /00FE                                           8AC15030
00C6 0  7037            MDX     /00FE                                           8AC15040
00C7 0  7036            MDX     /00FE                                           8AC15050
00C8 0  7035            MDX     /00FE                                           8AC15060
00C9 0  7034            MDX     /00FE                                           8AC15070
00CA 0  7033            MDX     /00FE                                           8AC15080
00CB 0  7032            MDX     /00FE                                           8AC15090
00CC 0  7031            MDX     /00FE                                           8AC15100
00CD 0  7030            MDX     /00FE                                           8AC15110
00CE 0  702F            MDX     /00FE                                           8AC15120
00CF 0  702E            MDX     /00FE                                           8AC15130
00D0 0  702D            MDX     /00FE                                           8AC15140
00D1 0  702C            MDX     /00FE                                           8AC15150
00D2 0  7028            MDX     /00FE                                           8AC15160
00D3 0  702A            MDX     /00FE                                           8AC15170
00D4 0  7029            MDX     /00FE                                           8AC15180
00D5 0  7028            MDX     /00FE                                           8AC15190
00D6 0  7027            MDX     /00FE                                           8AC15200
00D7 0  7026            MDX     /00FE                                           8AC15210
                        *                                                       8AC15220
                        *                                                       8AC15230
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC15240
                        *           CORRECTIONS FOR THE FOLLOWING 38    *       8AC15250
                        *           WORDS MUST BE MADE IN THE CARD      *       8AC15260
                        *           NUMBERED 5 OF THIS AUX PROGRAMS     *       8AC15270
                        *           7 CARD OBJECT DECK.                 *       8AC15280
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC15290
                        *                                                       8AC15300
                        *                                                       8AC15310
00D8 0  7025            MDX     /00FE                                           8AC15320
00D9 0  7024            MDX     /00FE                                           8AC15330
00DA 0  7023            MDX     /00FE                                           8AC15340
00DB 0  7022            MDX     /00FE                                           8AC15350
00DC 0  7021            MDX     /00FE                                           8AC15360
00DD 0  7020            MDX     /00FE                                           8AC15370
00DE 0  701F            MDX     /00FE                                           8AC15380
00DF 0  701E            MDX     /00FE                                           8AC15390
00E0 0  701D            MDX     /00FE                                           8AC15400
00E1 0  701C            MDX     /00FE                                           8AC15410
00E2 0  701B            MDX     /00FE                                           8AC15420
00E3 0  701A            MDX     /00FE                                           8AC15430
00E4 0  7019            MDX     /00FE                                           8AC15440
00E5 0  7018            MDX     /00FE                                           8AC15450
00E6 0  7017            MDX     /00FE                                           8AC15460
00E7 0  7016            MDX     /00FE                                           8AC15470
00E8 0  7015            MDX     /00FE                                           8AC15480
00E9 0  7014            MDX     /00FE                                           8AC15490
00EA 0  7013            MDX     /00FE                                           8AC15500
00EB 0  7012            MDX     /00FE                                           8AC15510
00EC 0  7011            MDX     /00FE                                           8AC15520
00ED 0  7010            MDX     /00FE                                           8AC15530
00EE 0  700F            MDX     /00FE                                           8AC15540
00EF 0  700E            MDX     /00FE                                           8AC15550
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AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1ST 1053

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00F0 0  700D            MDX     /00FE                                   8AC15560
00F1 0  700C            MDX     /00FE                                   8AC15570
00F2 0  7008            MDX     /00FE                                   8AC15580
00F3 0  700A            MDX     /00FE                                   8AC15590
00F4 0  7009            MDX     /00FE                                   8AC15600
00F5 0  7008            MDX     /00FE                                   8AC15610
00F6 0  7007            MDX     /00FE                                   8AC15620
00F7 0  7006            MDX     /00FE                                   8AC15630
00F8 0  7005            MDX     /00FE                                   8AC15640
00F9 0  7004            MDX     /00FE                                   8AC15650
00FA 0  7003            MDX     /00FE                                   8AC15660
00FB 0  7002            MDX     /00FE                                   8AC15670
00FC 0  7001            MDX     /00FE                                   8AC15680
00FD 0  7000            MDX     /00FE                                   8AC15690
                ********************************************************* 8AC15700
                *                                                       * 8AC15710
000D            QQQQ    EQU     /D          GO TO LOADER AT /D          8AC15720
70D7            NNNN    EQU     /70D7       FOR CARD LOADER AT /35      8AC15730
0813            WWWW    EQU     /0813       SET IN LOADER AT /04        8AC15740
7035            TTTT    EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO    8AC15750
                *                           THE BRANCH FROM THE LOADER  8AC15760
                *                           TO RETUR IN THIS PROGRAM.   8AC15770
                ********************************************************* 8AC15780
00FE    00FD            END     *-1         END CARD NEVER USED         8AC15790
```


AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1ST 1053

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	0800	0053,0055,0057,0065
CEGO	0067	004C
CEOFF	0056	0038,C058
CEON	0054	003A,0045
CESW	0062	0041
DSW52	0052	0036,003D
MODIF	0002	0053,0055,0057,0065
NNNN	70D7	0052
NOTRD	0058	0043,004E,0061,0067,0068,0069,006A,006B,006C,006D, 006E,006F,0070,0071,0072,0073,0074,0075,0076,0077, 0078,0079,007A,007B,007C,007D,007E,007F,0080,0081, 0082,C083,0084,0085,0086,0087,0088,0089,008A,008B, 008C,008D,008E,008F,0090,0091,0092,0093,0094,0095, 0096,C097,0098,0099,009A,009B,009C,009D,009E,009F, 00A0,C0A1,00A2,00A3,00A4,00A5,00A6,00A7,00A8,00A9, 00AA,C0AB,00AC,00AD,00AE,00AF,00B0,00B1,00B2,00B3, 00B4,C0B5,00B6,00B7,00B8,00B9,00BA,00BB,00BC,00BD
OUTWD	0066	0064
QQQQ	000D	0060
RETUR	003A	00FE
SAVE2	005C	0038,0046
SAVE3	005E	003C
SENBI	0050	003F,0040,0042
STATU	0063	003E
TERM	004E	0048
TTTT	7035	0056
WRITE	0064	
WWWW	0813	0058

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                         ABS
02BC                     ORG     /36                                    8AC15800
                    *                                                   8AC15810
                    *****************************************************8AC15820
0800                AREA  EQU     /0800      1ST 1053 AREA CODE         8AC15830
                    *       IF THIS PROG IS TO BE USED FOR A MACH       8AC15840
                    * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH      8AC15850
                    * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST   8AC15860
                    * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A     8AC15870
                    * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG     8AC15880
                    * GENERATOR WRITE-UP FOR PROCEDURE.                 8AC15890
                    *                                                   8AC15900
0004                MODIF EQU     /0004      2ND 1053 MODIFIER BIT      8AC15910
                    *****************************************************8AC15920
                    *                                                   8AC15930
                    *                                                   8AC15940
                    *                                                   8AC15950
                    *            2ND 1053 SKELETON PROGRAM              8AC15960
                    *            (SEE AUX CE PROG GENERATOR             8AC15970
                    *            * WRITE-UP FOR USE PROCEDURE)          8AC15980
                    *            ****************************           8AC15990
                    * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE        8AC16000
                    *                                                   8AC16010
                    *                                                   8AC16020
                    *                                                   8AC16030
                    *                                                   8AC16040
                    *            PURPOSE                                8AC16050
                    *               THE PURPOSE OF THIS PROGRAM IS      8AC16060
                    *               TO PROVIDE A SKELETON PROGRAM       8AC16070
                    *               UPON WHICH THE CE CAN WRITE AN      8AC16080
                    *               AUX STORAGE PROGRAM.                8AC16090
                    *                                                   8AC16100
                    *                                                   8AC16110
                    *            GENERAL INSTRUCTIONS                   8AC16120
                    *            CE SWITCH SETTINGS                     8AC16130
                    *               GOOO1111  CE SERVICE STOP           8AC16140
                    *               11111111  TERMINATE PROGRAM         8AC16150
                    *               ALL OTHER COMBINATIONS ARE STORED   8AC16160
                    *               * AT THE LOCATION  CESW  FOR        8AC16170
                    *               * POSSIBLE USE BY THE CE TO         8AC16180
                    *               * CONTPOL HIS PROGRAM               8AC16190
                    *                                                   8AC16200
                    *                                                   8AC16210
                    *****************************************          8AC16220
                    *                                                   8AC16230
                    *                                                   8AC16240
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC16250
                    *            CORRECTIONS FOR THE FOLLOWING 27   *   8AC16260
                    *            WORDS MUST BE MADE IN THE CARD     *   8AC16270
                    *            NUMBERED X OF THIS AUX PROGRAMS    *   8AC16280
                    *            7 CARD OBJECT DECK.                *   8AC16290
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC16300
                    *                                                   8AC16310
                    *                                                   8AC16320
                    *                                                   8AC16330
                    *            AUX PROG ENTRY POINTS                  8AC16340
                    *            *********************                  8AC16350
                    *                                                   8AC16360
                    *            1ST PASS ENTRY                         8AC16370
                    *            **************                         8AC16380
                    *                                                   8AC16390
0036 0  C01B                 LD      DSW52      RESTORE LOC NICE        8AC16400
0037 0  D0FD                 STO     /35        * IN AUX LOADER         8AC16410
                    *                                                   8AC16420
0038 0  C01D                 LD      CEOFF      PLACE BRANCH            8AC16430
0039 0  D0CA                 STO     /04        * TO RETUR LABEL        8AC16440
                    *                                                   8AC16450
                    *            ALL BUT 1ST PASS ENTRY POINT           8AC16460
                    *            ****************************           8AC16470
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003A 0  0819        RETUR XIO     CEON       SET DEVICE IN CE MODE    8AC16480
003B 0  6A21              STX     2 SAVE2+1  SAVE INDEX REGISTER 2    8AC16490
003C 0  6822              STX     3 SAVE3+1  SAVE INDEX REGISTER 3    8AC16500
003D 0  0814              XIO     DSW52      SENSE DEVICE STATUS      8AC16510
003E 0  D024              STO     STATU      SAVE DEVICE STATUS       8AC16520
003F 0  0810              XIO     SENBI      SENSE CE PROG SW TO ACCUM 8AC16530
0040 0  E00F              AND     SENBI      BLOCK OUT PROG SEL SW    8AC16540
0041 0  D020              STO     CESW       SAVE CE PROG SW SETTINGS 8AC16550
0042 0  F00D              EOR     SENBI                               8AC16560
0043 00 4C180058          BSC  L  NOTRD,+-   BR TERMINATE PROGRAM     8AC16570
0045 0  F00E              EOR     CEON                                8AC16580
0046 00 4C18005C          BSC  L  SAVE2,+-   BR SERVICE STOP          8AC16590
0048 00 CC00004E          LDD  L  TERM                                8AC16600
004A 00 DC0000FE          STD  L  */00FE     SET TERMINATOR BR AT END 8AC16610
                    *                        * OF AUX CORE AS A SAFETY 8AC16620
                    *  .                     * PRECAUTION             8AC16630
                    *                                                 8AC16640
004C 00 4C000067          BSC  L  CEGO       BR TO DO IT YOURSELF PROG 8AC16650
004E 00 4C000058    TERM  BSC  L  NOTRD      TERMINATOR BRANCH        8AC16660
                    ***************************************************8AC16670
                    *                                                 8AC16680
                    *            CONSTANTS AND/OR IOCC WORDS          8AC16690
0050    0000              BSS  E  0                                   8AC16700
0050 0  00FF        SENBI DC      /00FF      TERMINATOR CONSTANT      8AC16710
                    *                                                 8AC16720
                    *                                                 8AC16730
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I8AC16740
                    *            CORRECTIONS FOR THE FOLLOWING 27   * 8AC16750
                    *            WORDS MUST BE MADE IN THE CARD     * 8AC16760
                    *            NUMBERED 0 OF THIS AUX PROGRAMS    * 8AC16770
                    *            7 CARD OBJECT DECK.                * 8AC16780
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I8AC16790
                    *                                                 8AC16800
                    *                                                 8AC16810
0051 0  0760              DC      /0760      SENSE CE SWITCHES        8AC16820
0052 0  70D7        DSW52 DC      NNNN                                8AC16830
0053 0  0F05              DC      /0701+AREA+MODIF RESET DEVICE STATUS 8AC16840
0054 0  00F0        CEON  DC      /00F0      CE SERVICE STOP CONST    8AC16850
0055 0  0805              DC      /0001+AREA+MODIF CE ON WORD         8AC16860
0056 0  7035        CEOFF DC      TTTT                                8AC16870
0057 0  0804              DC      /0000+AREA+MODIF CE OFF WORD        8AC16880
                    ***************************************          8AC16890
                    *                                                 8AC16900
                    *            EXIT POINTS TO AUX LOADER            8AC16910
                    *            **************************           8AC16920
                    *                                                 8AC16930
                    *            TERMINATE EXIT POINT                 8AC16940
0058 00 65000813    NOTRD LDX  L1 WWWW                                8AC16950
005A 0  69A9              STX    1 /04                                8AC16960
005B 0  08FA              XIO    CEOFF      REMOVE DEVICE FROM CE MODE8AC16970
                    *                                                 8AC16980
                    *            NORMAL EXIT POINT                    8AC16990
005C 00 66000000    SAVE2 LDX  L2 0                                   8AC17000
005E 00 67000000    SAVE3 LDX  L3 0                                   8AC17010
                    *                                                 8AC17020
0060 0  70AC              MDX    QQCQ                                 8AC17030
                    ***************************************          8AC17040
                    ***************************************************8AC17050
                    ***************************************************8AC17060
                    *                                                 8AC17070
                    *            THE FOLLOWING CONSTANTS AND IOCC     8AC17080
                    *            WORDS HAS BEEN PLACED HERE TO AID    8AC17090
                    *            THE CE IN HIS PROGRAMMING EFFORT.    8AC17100
                    *                                                 8AC17110
0061 0  70F6              MDX    NOTRD      THIS LOC IS NOT USED     8AC17120
0062    0000              BSS  E 0                                    8AC17130
0062 0  0000        CESW  DC      0          CE PROGRAM SW SETTING    8AC17140
0063 0  0000        STATU DC      0          DEVICE STATUS WORD       8AC17150
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                        *                                                       8AC17160
0064 0  0066    WRITE DC        OUTWD       REFERS TO OUTPUT CHAR.              8AC17170
0065 0  0904          DC        /0100+AREA+MODIF IOCC WRITE WORD                8AC17180
                        *                                                       8AC17190
0066 0  0000    OUTWD DC        0           PLACE OUTPUT CHAR. HERE             8AC17200
                        ********************************************************* 8AC17210
                        *                                                       8AC17220
                        *                                                       8AC17230
                        *                                                       8AC17240
                        *               THIS IS THE STARTING POINT OF YOUR      8AC17250
                        *               PROGRAM.                                8AC17260
                        *                                                       8AC17270
                        *                                                       8AC17280
                        *                                                       8AC17290
                        *                                                       8AC17300
0067 0  70F0    CEGO  MDX       NOTRD       1ST LOC OF YOUR PROGRAM             8AC17310
                        *               BRANCH TO LOCATION  SAVE2   WHEN        8AC17320
                        *               EXITING FROM YOUR PROGRAM.              8AC17330
0068 0  70EF            MDX     NOTRD                                           8AC17340
0069 0  70EE            MDX     NOTRD                                           8AC17350
006A 0  70ED            MDX     NOTRD                                           8AC17360
006B 0  70EC            MDX     NOTRD                                           8AC17370
                        *                                                       8AC17380
                        *                                                       8AC17390
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC17400
                        *               CORRECTIONS FOR THE FOLLOWING 27    *   8AC17410
                        *               WORDS MUST BE MADE IN THE CARD      *   8AC17420
                        *               NUMBERED 1 OF THIS AUX PROGRAMS     *   8AC17430
                        *               7 CARD OBJECT DECK.                 *   8AC17440
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC17450
                        *                                                       8AC17460
                        *                                                       8AC17470
006C 0  70EB            MDX     NOTRD                                           8AC17480
006D 0  70EA            MDX     NOTRD                                           8AC17490
006E 0  70E9            MDX     NOTRD                                           8AC17500
006F 0  70E8            MDX     NOTRD                                           8AC17510
0070 0  70E7            MDX     NOTRD                                           8AC17520
0071 0  70E6            MDX     NOTRD                                           8AC17530
0072 0  70E5            MDX     NOTRD                                           8AC17540
0073 0  70E4            MDX     NOTRD                                           8AC17550
0074 0  70E3            MDX     NOTRD                                           8AC17560
0075 0  70E2            MDX     NOTRD                                           8AC17570
0076 0  70E1            MDX     NOTRD                                           8AC17580
0077 0  70E0            MDX     NOTRD                                           8AC17590
0078 0  70DF            MDX     NOTRD                                           8AC17600
0079 0  70DE            MDX     NOTRD                                           8AC17610
007A 0  70DD            MDX     NOTRD                                           8AC17620
007B 0  70DC            MDX     NOTRD                                           8AC17630
007C 0  70DB            MDX     NOTRD                                           8AC17640
007D 0  70DA            MDX     NOTRD                                           8AC17650
007E 0  70D9            MDX     NOTRD                                           8AC17660
007F 0  70D8            MDX     NOTRD                                           8AC17670
0080 0  70D7            MDX     NOTRD                                           8AC17680
0081 0  70D6            MDX     NOTRD                                           8AC17690
0082 0  70D5            MDX     NOTRD                                           8AC17700
0083 0  70D4            MDX     NOTRD                                           8AC17710
0084 0  70D3            MDX     NOTRD                                           8AC17720
0085 0  70D2            MDX     NOTRD                                           8AC17730
0086 0  70D1            MDX     NOTRD                                           8AC17740
                        *                                                       8AC17750
                        *                                                       8AC17760
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC17770
                        *               CORRECTIONS FOR THE FOLLOWING 27    *   8AC17780
                        *               WORDS MUST BE MADE IN THE CARD      *   8AC17790
                        *               NUMBERED 2 OF THIS AUX PROGRAMS     *   8AC17800
                        *               7 CARD OBJECT DECK.                 *   8AC17810
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC17820
                        *                                                       8AC17830
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                        *                                                       8AC17840
0087 0  70D0            MDX     NOTRD                                           8AC17850
0088 0  70CF            MDX     NOTRD                                           8AC17860
0089 0  70CE            MDX     NOTRD                                           8AC17870
008A 0  70CD            MDX     NOTRD                                           8AC17880
008B 0  70CC            MDX     NOTRD                                           8AC17890
009C 0  70CB            MDX     NOTRD                                           8AC17900
008D 0  70CA            MDX     NOTRD                                           8AC17910
008E 0  70C9            MDX     NOTRD                                           8AC17920
008F 0  70C8            MDX     NOTRD                                           8AC17930
0090 0  70C7            MDX     NOTRD                                           8AC17940
0091 0  70C6            MDX     NOTRD                                           8AC17950
0092 0  70C5            MDX     NOTRD                                           8AC17960
0093 0  70C4            MDX     NOTRD                                           8AC17970
0094 0  70C3            MDX     NOTRD                                           8AC17980
0095 0  70C2            MDX     NOTRD                                           8AC17990
0096 0  70C1            MDX     NOTRD                                           8AC18000
0097 0  70C0            MDX     NOTRD                                           8AC18010
0098 0  70BF            MDX     NOTRD                                           8AC18020
0099 0  70BE            MDX     NOTRD                                           8AC18030
009A 0  70BD            MDX     NOTRD                                           8AC18040
009B 0  70BC            MDX     NOTRD                                           8AC18050
009C 0  70BB            MDX     NOTRD                                           8AC18060
009D 0  70BA            MDX     NOTRD                                           8AC18070
009E 0  70B9            MDX     NOTRD                                           8AC18080
009F 0  70B8            MDX     NOTRD                                           8AC18090
00A0 0  70B7            MDX     NOTRD                                           8AC18100
00A1 0  70B6            MDX     NOTRD                                           8AC18110
                        *                                                       8AC18120
                        *                                                       8AC18130
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC18140
                        *               CORRECTIONS FOR THE FOLLOWING 27    *   8AC18150
                        *               WORDS MUST BE MADE IN THE CARD      *   8AC18160
                        *               NUMBERED 3 OF THIS AUX PROGRAMS     *   8AC18170
                        *               7 CARD OBJECT DECK.                 *   8AC18180
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC18190
                        *                                                       8AC18200
                        *                                                       8AC18210
00A2 0  70B5            MDX     NOTRD                                           8AC18220
00A3 0  70B4            MDX     NOTRD                                           8AC18230
00A4 0  70B3            MDX     NOTRD                                           8AC18240
00A5 0  70B2            MDX     NOTRD                                           8AC18250
00A6 0  70B1            MDX     NOTRD                                           8AC18260
00A7 0  70B0            MDX     NOTRD                                           8AC18270
00A8 0  70AF            MDX     NOTRD                                           8AC18280
00A9 0  70AE            MDX     NOTRD                                           8AC18290
00AA 0  70AD            MDX     NOTRD                                           8AC18300
00AB 0  70AC            MDX     NOTRD                                           8AC18310
00AC 0  70AB            MDX     NOTRD                                           8AC18320
00AD 0  70AA            MDX     NOTRD                                           8AC18330
00AE 0  70A9            MDX     NOTRD                                           8AC18340
00AF 0  70A8            MDX     NOTRD                                           8AC18350
00B0 0  70A7            MDX     NOTRD                                           8AC18360
00B1 0  70A6            MDX     NOTRD                                           8AC18370
00B2 0  70A5            MDX     NOTRD                                           8AC18380
00B3 0  70A4            MDX     NOTRD                                           8AC18390
00B4 0  70A3            MDX     NOTRD                                           8AC18400
00B5 0  70A2            MDX     NOTRD                                           8AC18410
00B6 0  70A1            MDX     NOTRD                                           8AC18420
00B7 0  70A0            MDX     NOTRD                                           8AC18430
00B8 0  709F            MDX     NOTRD                                           8AC18440
00B9 0  709E            MDX     NOTRD                                           8AC18450
00BA 0  709D            MDX     NOTRD                                           8AC18460
00BB 0  709C            MDX     NOTRD                                           8AC18470
00BC 0  709B            MDX     NOTRD                                           8AC18480
                        *                                                       8AC18490
                        *                                                       8AC18500
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC18510
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                        *            CORRECTIONS FOR THE FOLLOWING 27   *  8AC18520
                        *            WORDS MUST BE MADE IN THE CARD     *  8AC18530
                        *            NUMBERED 4 OF THIS AUX PROGRAMS    *  8AC18540
                        *            7 CARD OBJECT DECK.                *  8AC18550
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC18560
                        *                                                  8AC18570
                        *                                                  8AC18580
00BD 0  709A                MDX     NOTRD                                  8AC18590
00BE 0  703F                MDX     /00FE                                  8AC18600
00BF 0  703E                MDX     /00FE                                  8AC18610
00C0 0  703D                MDX     /00FE                                  8AC18620
00C1 0  703C                MDX     /00FE                                  8AC18630
00C2 0  703B                MDX     /00FE                                  8AC18640
00C3 0  703A                MDX     /00FE                                  8AC18650
00C4 0  7039                MDX     /00FE                                  8AC18660
00C5 0  7038                MDX     /00FE                                  8AC18670
00C6 0  7037                MDX     /00FE                                  8AC18680
00C7 0  7036                MDX     /00FE                                  8AC18690
00C8 0  7035                MDX     /00FE                                  8AC18700
00C9 0  7034                MDX     /00FE                                  8AC18710
00CA 0  7033                MDX     /00FE                                  8AC18720
00CB 0  7032                MDX     /00FE                                  8AC18730
00CC 0  7031                MDX     /00FE                                  8AC18740
00CD 0  7030                MDX     /00FE                                  8AC18750
00CE 0  702F                MDX     /00FE                                  8AC18760
00CF 0  702E                MDX     /00FE                                  8AC18770
00D0 0  702D                MDX     /00FE                                  8AC18780
00D1 0  702C                MDX     /00FE                                  8AC18790
00D2 0  702B                MDX     /00FE                                  8AC18800
00D3 0  702A                MDX     /00FE                                  8AC18810
00D4 0  7029                MDX     /00FE                                  8AC18820
00D5 0  7028                MDX     /00FE                                  8AC18830
00D6 0  7027                MDX     /00FE                                  8AC18840
00D7 0  7026                MDX     /00FE                                  8AC18850
                        *                                                  8AC18860
                        *                                                  8AC18870
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC18880
                        *            CORRECTIONS FOR THE FOLLOWING 38   *  8AC18890
                        *            WORDS MUST BE MADE IN THE CARD     *  8AC18900
                        *            NUMBERED 5 OF THIS AUX PROGRAMS    *  8AC18910
                        *            7 CARD OBJECT DECK.                *  8AC18920
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC18930
                        *                                                  8AC18940
                        *                                                  8AC18950
00D8 0  7025                MDX     /00FE                                  8AC18960
00D9 0  7024                MDX     /00FE                                  8AC18970
00DA 0  7023                MDX     /00FE                                  8AC18980
00DB 0  7022                MDX     /00FE                                  8AC18990
00DC 0  7021                MDX     /00FE                                  8AC19000
00DD 0  7020                MDX     /00FE                                  8AC19010
00DE 0  701F                MDX     /00FE                                  8AC19020
00DF 0  701E                MDX     /00FE                                  8AC19030
00E0 0  701D                MDX     /00FE                                  8AC19040
00E1 0  701C                MDX     /00FE                                  8AC19050
00E2 0  701B                MDX     /00FE                                  8AC19060
00E3 0  701A                MDX     /00FE                                  8AC19070
00E4 0  7019                MDX     /00FE                                  8AC19080
00E5 0  7018                MDX     /00FE                                  8AC19090
00E6 0  7017                MDX     /00FE                                  8AC19100
00E7 0  7016                MDX     /00FE                                  8AC19110
00E8 0  7015                MDX     /00FE                                  8AC19120
00E9 0  7014                MDX     /00FE                                  8AC19130
00EA 0  7013                MDX     /00FE                                  8AC19140
00EB 0  7012                MDX     /00FE                                  8AC19150
00EC 0  7011                MDX     /00FE                                  8AC19160
00ED 0  7010                MDX     /00FE                                  8AC19170
00EE 0  700F                MDX     /00FE                                  8AC19180
00EF 0  700E                MDX     /00FE                                  8AC19190
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00F0 0  7010                MDX     /00FE                                  8AC19200
00F1 0  700C                MDX     /00FE                                  8AC19210
00F2 0  7008                MDX     /00FE                                  8AC19220
00F3 0  7004                MDX     /00FE                                  8AC19230
00F4 0  7009                MDX     /00FE                                  8AC19240
00F5 0  7008                MDX     /00FE                                  8AC19250
00F6 0  7007                MDX     /00FE                                  8AC19260
00F7 0  7006                MDX     /00FE                                  8AC19270
00F8 0  7005                MDX     /00FE                                  8AC19280
00F9 0  7004                MDX     /00FE                                  8AC19290
00FA 0  7003                MDX     /00FE                                  8AC19300
00FB 0  7002                MDX     /00FE                                  8AC19310
00FC 0  7001                MDX     /00FE                                  8AC19320
00FD 0  7000                MDX     /00FE                                  8AC19330
                        ********************************************************  8AC19340
                        *                                                  8AC19350
000D                    QQQQ  EQU     /D          GO TO LOADER AT /D       8AC19360
70D7                    NNNN  EQU     /70D7       FOR CARD LOADER AT /35   8AC19370
0813                    WWWW  EQU     /0813       SET IN LOADEP AT /04     8AC19380
7035                    TTTT  EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO  8AC19390
                        *                         THE BRANCH FROM THE LOADER 8AC19400
                        *                         TO RETUR IN THIS PROGRAM.  8AC19410
                        ********************************************************  8AC19420
00FE    00FD                END     *-1         END CARD NEVER USED          8AC19430
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 2ND 1053

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	0800	0053,0055,0057,0065
CEGO	0067	004C
CEOFF	0056	0038,005B
CEON	0054	003A,0045
CESW	0062	0041
DSW52	0052	0036,003D
MODIF	0004	0053,0055,0057,0065
NNNN	70D7	0052
NOTRD	0058	0043,004E,0061,0067,0068,0069,006A,006B,006C,006D, 006E,006F,0070,0071,0072,0073,0074,0075,0076,0077, 0078,0079,007A,007B,007C,007D,007E,007F,0080,0081, 0082,0083,0084,0085,0086,0087,0088,0089,008A,008B, 008C,008D,008E,008F,C090,C091,0092,0093,0094,0095, 0096,0097,0098,0099,009A,009B,009C,009D,009E,009F, 00A0,00A1,00A2,00A3,00A4,00A5,00A6,00A7,00A8,00A9, 00AA,00AB,00AC,00AD,00AE,00AF,00B0,00B1,00B2,00B3, 00B4,00B5,00B6,00B7,00B8,00B9,00BA,00BB,00BC,00BD
OUTWD	0066	0064
QQQQ	000D	0060
RETUR	003A	00FE
SAVE2	005C	0038,0046
SAVE3	005E	003C
SENBI	0050	003F,0040,0042
STATU	0063	003E
TERM	004E	0048
TTTT	7035	0056
WRITE	0064	
WWWW	0813	0058

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 3RD 1053

```
                        ABS                                              8AC19440
028C                    ORG     /36                                      8AC19450
                    *                                                    8AC19460
                    ***************************************************  8AC19470
0800                AREA  EQU     /0800       1ST 1053 AREA CODE         8AC19480
                    *         IF THIS PROG IS TO BE USED FOR A MACH      8AC19490
                    * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH      8AC19500
                    * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST   8AC19510
                    * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A     8AC19520
                    * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG      8AC19530
                    * GENERATOR WRITE-UP FOR PROCEDURE.                  8AC19540
                    *                                                    8AC19550
0008                MODIF EQU     /0008       3RD 1053 MODIFIER BIT      8AC19560
                    ***************************************************  8AC19570
                    *                                                    8AC19580
                    *                                                    8AC19590
                    *             3RD 1053 SKELETON PROGRAM              8AC19600
                    *             (SEE AUX CE PROG GENERATOR             8AC19610
                    *             * WRITE-UP FOR USE PROCEDURE)          8AC19620
                    *             ****************************           8AC19630
                    * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE         8AC19640
                    *                                                    8AC19650
                    *                                                    8AC19660
                    *                                                    8AC19670
                    *                                                    8AC19680
                    *             PURPOSE                                8AC19690
                    *                THE PURPOSE OF THIS PROGRAM IS      8AC19700
                    *                TO PROVIDE A SKELETON PROGRAM       8AC19710
                    *                UPON WHICH THE CE CAN WRITE AN      8AC19720
                    *                AUX STORAGE PROGRAM.                8AC19730
                    *                                                    8AC19740
                    *                                                    8AC19750
                    *             GENERAL INSTRUCTIONS                   8AC19760
                    *             CE SWITCH SETTINGS                     8AC19770
                    *                00001111  CE SERVICE STOP           8AC19780
                    *                11111111  TERMINATE PROGRAM         8AC19790
                    *                ALL OTHER COMBINATIONS ARE STORED   8AC19800
                    *                * AT THE LOCATION  CESW  FOR        8AC19810
                    *                * POSSIBLE USE BY THE CE TO         8AC19820
                    *                * CONTROL HIS PROGRAM               8AC19830
                    *                                                    8AC19840
                    *                                                    8AC19850
                    ***************************************************  8AC19860
                    *                                                    8AC19870
                    *                                                    8AC19880
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC19890
                    *             CORRECTIONS FOR THE FOLLOWING 27   *   8AC19900
                    *             WORDS MUST BE MADE IN THE CARD     *   8AC19910
                    *             NUMBERED X OF THIS AUX PROGRAMS    *   8AC19920
                    *             7 CARD OBJECT DECK.                *   8AC19930
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC19940
                    *                                                    8AC19950
                    *                                                    8AC19960
                    *                                                    8AC19970
                    *             AUX PROG ENTRY POINTS                  8AC19980
                    *             *********************                  8AC19990
                    *                                                    8AC20000
                    *             1ST PASS ENTRY                         8AC20010
                    *             ***************                        8AC20020
                    *                                                    8AC20030
0036 0 C018             LD      DSW52       RESTORE LOC NICE             8AC20040
0037 0 D0FD             STO     /35         * IN AUX LOADER              8AC20050
                    *                                                    8AC20060
0038 0 C01D             LD      CEOFF       PLACE BRANCH                 8AC20070
0039 0 D0CA             STO     /04         * TO RETUR LABEL             8AC20080
                    *                                                    8AC20090
                    *             ALL BUT 1ST PASS ENTRY POINT           8AC20100
                    *             ****************************           8AC20110
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003A 0  0819        RETUR XIO     CEON       SET DEVICE IN CE MODE      8AC20120
003B 0  6A21              STX   2 SAVE2+1    SAVE INDEX REGISTER 2      8AC20130
003C 0  6B22              STX   3 SAVE3+1    SAVE INDEX REGISTER 3      8AC20140
003D 0  0814              XIO     DSW52      SENSE DEVICE STATUS        8AC20150
003E 0  D024              STO     STATU      SAVE DEVICE STATUS         8AC20160
003F 0  0810              XIO     SENBI      SENSE CE PROG SW TO ACCUM  8AC20170
0040 0  E00F              AND     SENBI      BLOCK OUT PROG SEL SW      8AC20180
0041 0  D020              STO     CESW       SAVE CE PROG SW SETTINGS   8AC20190
0042 0  F00D              EOR     SENBI                                 8AC20200
0043 00 4C180058          BSC   L NOTRD,+-   BR TERMINATE PROGRAM       8AC20210
0045 0  F00E              EOR     CEON                                  8AC20220
0046 00 4C18005C          BSC   L SAVE2,+-    BR SERVICE STOP           8AC20230
0048 00 CC00004E          LDD   L TERM                                  8AC20240
004A 00 DC0000FE          STD   L /00FE      SET TERMINATOR BR AT END   8AC20250
                    *                        * OF AUX CORE AS A SAFETY  8AC20260
                    *                        * PRECAUTION               8AC20270
                    *                                                   8AC20280
004C 00 4C000067          BSC   L CEGO       BR TO DO IT YOURSELF PROG  8AC20290
004E 00 4C000058    TERM  BSC   L NOTRD      TERMINATOR BRANCH          8AC20300
                    ********************************************************* 8AC20310
                    *                                                   8AC20320
                    *              CONSTANTS AND/OR IOCC WORDS          8AC20330
0050    0000              BSS   E 0                                     8AC20340
0050 0  00FF        SENBI DC      /00FF      TERMINATOR CONSTANT        8AC20350
                    *                                                   8AC20360
                    *                                                   8AC20370
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC20380
                    *              CORRECTIONS FOR THE FOLLOWING 27   * 8AC20390
                    *              WORDS MUST BE MADE IN THE CARD     * 8AC20400
                    *              NUMBERED 0 OF THIS AUX PROGRAMS    * 8AC20410
                    *              7 CARD OBJECT DECK.                * 8AC20420
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC20430
                    *                                                   8AC20440
                    *                                                   8AC20450
0051 0  0760              DC      /0760      SENSE CE SWITCHES          8AC20460
0052 0  70D7        DSW52 DC      NNNN                                  8AC20470
0053 0  0F09              DC      /0701+AREA+MODIF RESET DEVICE STATUS   8AC20480
0054 0  00F0        CEON  DC      /00F0      CE SERVICE STOP CONST      8AC20490
0055 0  0809              DC      /0001+AREA+MODIF CE ON WORD            8AC20500
0056 0  7035        CEOFF DC      TTTT                                  8AC20510
0057 0  0808              DC      /0000+AREA+MODIF CE OFF WORD           8AC20520
                    ********************************************        8AC20530
                    *                                                   8AC20540
                    *              EXIT POINTS TO AUX LOADER            8AC20550
                    *              ************************             8AC20560
                    *                                                   8AC20570
                    *              TERMINATE EXIT POINT                 8AC20580
0058 00 65000813    NOTRD LDX   L1 WWWW                                  8AC20590
005A 0  69A9              STX   1 /04                                   8AC20600
005B 0  08FA              XIO     CEOFF      REMOVE DEVICE FROM CE MODE 8AC20610
                    *                                                   8AC20620
                    *              NORMAL EXIT POINT                    8AC20630
005C 00 66000000    SAVE2 LDX   L2 0                                    8AC20640
005E 00 67000000    SAVE3 LDX   L3 0                                    8AC20650
                    *                                                   8AC20660
0060 0  70AC              MDX     QQQQ                                  8AC20670
                    ********************************************        8AC20680
                    ********************************************************* 8AC20690
                    ********************************************************* 8AC20700
                    *                                                   8AC20710
                    *              THE FOLLOWING CONSTANTS AND IOCC     8AC20720
                    *              WORDS HAS BEEN PLACED HERE TO AID    8AC20730
                    *              THE CE IN HIS PROGRAMMING EFFORT.    8AC20740
                    *                                                   8AC20750
0061 0  70F6              MDX     NOTRD      THIS LOC IS NOT USED       8AC20760
0062    0000              BSS   E 0                                     8AC20770
0062 0  0000        CESW  DC      0          CE PROGRAM SW SETTING      8AC20780
0063 0  0000        STATU DC      0          DEVICE STATUS WORD         8AC20790
```



```
                    *                                                   8AC20800
0064 0  0066        WRITE DC      OUTWD      REFERS TO OUTPUT CHAR.     8AC20810
0065 0  0908              DC      /0100+AREA+MODIF IOCC WRITE WORD       8AC20820
                    *                                                   8AC20830
0066 0  0000        OUTWD DC      0          PLACE OUTPUT CHAR. HERE    8AC20840
                    ********************************************************* 8AC20850
                    *                                                   8AC20860
                    *                                                   8AC20870
                    *                                                   8AC20880
                    *              THIS IS THE STARTING POINT OF YOUR   8AC20890
                    *              PROGRAM.                             8AC20900
                    *                                                   8AC20910
                    *                                                   8AC20920
                    *                                                   8AC20930
                    *                                                   8AC20940
0067 0  70F0        CEGO  MDX     NOTRD      1ST LOC OF YOUR PROGRAM    8AC20950
                    *              BRANCH TO LOCATION  SAVE2   WHEN     8AC20960
                    *              EXITING FROM YOUR PROGRAM.           8AC20970
0068 0  70EF              MDX     NOTRD                                 8AC20980
0069 0  70EE              MDX     NOTRD                                 8AC20990
006A 0  70ED              MDX     NOTRD                                 8AC21000
0068 0  70EC              MDX     NOTRD                                 8AC21010
                    *                                                   8AC21020
                    *                                                   8AC21030
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC21040
                    *              CORRECTIONS FOR THE FOLLOWING 27   * 8AC21050
                    *              WORDS MUST BE MADE IN THE CARD     * 8AC21060
                    *              NUMBERED 1 OF THIS AUX PROGRAMS    * 8AC21070
                    *              7 CARD OBJECT DECK.                * 8AC21080
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC21090
                    *                                                   8AC21100
                    *                                                   8AC21110
006C 0  70EB              MDX     NOTRD                                 8AC21120
006D 0  70EA              MDX     NOTRD                                 8AC21130
006E 0  70E9              MDX     NOTRD                                 8AC21140
006F 0  70E8              MDX     NOTRD                                 8AC21150
0070 0  70E7              MDX     NOTRD                                 8AC21160
0071 0  70E6              MDX     NOTRD                                 8AC21170
0072 0  70E5              MDX     NOTRD                                 8AC21180
0073 0  70E4              MDX     NOTRD                                 8AC21190
0074 0  70E3              MDX     NOTRD                                 8AC21200
0075 0  70E2              MDX     NOTRD                                 8AC21210
0076 0  70E1              MDX     NOTRD                                 8AC21220
0077 0  70E0              MDX     NOTRD                                 8AC21230
0078 0  70DF              MDX     NOTRD                                 8AC21240
0079 0  70DE              MDX     NOTRD                                 8AC21250
007A 0  70DD              MDX     NOTRD                                 8AC21260
007B 0  70DC              MDX     NOTRD                                 8AC21270
007C 0  70DB              MDX     NOTRD                                 8AC21280
007D 0  70DA              MDX     NOTRD                                 8AC21290
007E 0  70D9              MDX     NOTRD                                 8AC21300
007F 0  70D8              MDX     NOTRD                                 8AC21310
0080 0  70D7              MDX     NOTRD                                 8AC21320
0081 0  70D6              MDX     NOTRD                                 8AC21330
0082 0  70D5              MDX     NOTRD                                 8AC21340
0083 0  70D4              MDX     NOTRD                                 8AC21350
0084 0  70D3              MDX     NOTRD                                 8AC21360
0085 0  70D2              MDX     NOTRD                                 8AC21370
0086 0  70D1              MDX     NOTRD                                 8AC21380
                    *                                                   8AC21390
                    *                                                   8AC21400
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC21410
                    *              CORRECTIONS FOR THE FOLLOWING 27   * 8AC21420
                    *              WORDS MUST BE MADE IN THE CARD     * 8AC21430
                    *              NUMBERED 2 OF THIS AUX PROGRAMS    * 8AC21440
                    *              7 CARD OBJECT DECK.                * 8AC21450
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC21460
                    *                                                   8AC21470
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                         *                                                  8AC21480
0087 0  7000                     MDX     NOTRD                              8AC21490
0088 0  70CF                     MDX     NOTRD                              8AC21500
0089 0  70CE                     MDX     NOTRD                              8AC21510
008A 0  70CD                     MDX     NOTRD                              8AC21520
008B 0  70CC                     MDX     NOTRD                              8AC21530
008C 0  70CB                     MDX     NOTRD                              8AC21540
008D 0  70CA                     MDX     NOTRD                              8AC21550
008E 0  70C9                     MDX     NOTRD                              8AC21560
008F 0  70C8                     MDX     NOTRD                              8AC21570
0090 0  70C7                     MDX     NOTRD                              8AC21580
0091 0  70C6                     MDX     NOTRD                              8AC21590
0092 0  70C5                     MDX     NOTRD                              8AC21600
0093 0  70C4                     MDX     NOTRD                              8AC21610
0094 0  70C3                     MDX     NOTRD                              8AC21620
0095 0  70C2                     MDX     NOTRD                              8AC21630
0096 0  70C1                     MDX     NOTRD                              8AC21640
0097 0  70C0                     MDX     NOTRD                              8AC21650
0098 0  70BF                     MDX     NOTRD                              8AC21660
0099 0  70BE                     MDX     NOTRD                              8AC21670
009A 0  70BD                     MDX     NOTRD                              8AC21680
009B 0  70BC                     MDX     NOTRD                              8AC21690
009C 0  70BB                     MDX     NOTRD                              8AC21700
009D 0  70BA                     MDX     NOTRD                              8AC21710
009E 0  70B9                     MDX     NOTRD                              8AC21720
009F 0  70B8                     MDX     NOTRD                              8AC21730
00A0 0  70B7                     MDX     NOTRD                              8AC21740
00A1 0  70B6                     MDX     NOTRD                              8AC21750
                         *                                                  8AC21760
                         *                                                  8AC21770
                         *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC21780
                         *                                                * 8AC21790
                         *          CORRECTIONS FOR THE FOLLOWING 27      * 8AC21800
                         *          WORDS MUST BE MADE IN THE CARD        * 8AC21810
                         *          NUMBERED 3 OF THIS AUX PROGRAMS       * 8AC21820
                         *          7 CARD OBJECT DECK.                   * 8AC21830
                         *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC21840
                         *                                                  8AC21850
                         *                                                  8AC21860
00A2 0  70B5                     MDX     NOTRD                              8AC21870
00A3 0  70B4                     MDX     NOTRD                              8AC21880
00A4 0  70B3                     MDX     NOTRD                              8AC21890
00A5 0  70B2                     MDX     NOTRD                              8AC21900
00A6 0  70B1                     MDX     NOTRD                              8AC21910
00A7 0  70B0                     MDX     NOTRD                              8AC21920
00A8 0  70AF                     MDX     NOTRD                              8AC21930
00A9 0  70AE                     MDX     NOTRD                              8AC21940
00AA 0  70AD                     MDX     NOTRD                              8AC21950
00AB 0  70AC                     MDX     NOTRD                              8AC21960
00AC 0  70AB                     MDX     NOTRD                              8AC21970
00AD 0  70AA                     MDX     NOTRD                              8AC21980
00AE 0  70A9                     MDX     NOTRD                              8AC21990
00AF 0  70A8                     MDX     NOTRD                              8AC22000
00B0 0  70A7                     MDX     NOTRD                              8AC22010
00B1 0  70A6                     MDX     NOTRD                              8AC22020
00B2 0  70A5                     MDX     NOTRD                              8AC22030
00B3 0  70A4                     MDX     NOTRD                              8AC22040
00B4 0  70A3                     MDX     NOTRD                              8AC22050
00B5 0  70A2                     MDX     NOTRD                              8AC22060
00B6 0  70A1                     MDX     NOTRD                              8AC22070
00B7 0  70A0                     MDX     NOTRD                              8AC22080
00B8 0  709F                     MDX     NOTRD                              8AC22090
00B9 0  709E                     MDX     NOTRD                              8AC22100
00BA 0  709D                     MDX     NOTRD                              8AC22110
00BB 0  709C                     MDX     NOTRD                              8AC22120
00BC 0  709B                     MDX     NOTRD                              8AC22130
                         *                                                  8AC22140
                         *                                                  8AC22150
                         *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I
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                         *          CORRECTIONS FOR THE FOLLOWING 27      * 8AC22160
                         *          WORDS MUST BE MADE IN THE CARD        * 8AC22170
                         *          NUMBERED 4 OF THIS AUX PROGRAMS       * 8AC22180
                         *          7 CARD OBJECT DECK.                   * 8AC22190
                         *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC22200
                         *                                                  8AC22210
                         *                                                  8AC22220
008D 0  709A                     MDX     NOTRD                              8AC22230
008E 0  703F                     MDX     /00FE                              8AC22240
008F 0  703E                     MDX     /00FE                              8AC22250
00C0 0  703D                     MDX     /00FE                              8AC22260
00C1 0  703C                     MDX     /00FE                              8AC22270
00C2 0  703B                     MDX     /00FE                              8AC22280
00C3 0  703A                     MDX     /00FE                              8AC22290
00C4 0  7039                     MDX     /00FE                              8AC22300
00C5 0  7038                     MDX     /00FE                              8AC22310
00C6 0  7037                     MDX     /00FE                              8AC22320
00C7 0  7036                     MDX     /00FE                              8AC22330
00C8 0  7035                     MDX     /00FE                              8AC22340
00C9 0  7034                     MDX     /00FE                              8AC22350
00CA 0  7033                     MDX     /00FE                              8AC22360
00CB 0  7032                     MDX     /00FE                              8AC22370
00CC 0  7031                     MDX     /00FE                              8AC22380
00CD 0  7030                     MDX     /00FE                              8AC22390
00CE 0  702F                     MDX     /00FE                              8AC22400
00CF 0  702E                     MDX     /00FE                              8AC22410
00D0 0  702D                     MDX     /00FE                              8AC22420
00D1 0  702C                     MDX     /00FE                              8AC22430
00D2 0  702B                     MDX     /00FE                              8AC22440
00D3 0  702A                     MDX     /00FE                              8AC22450
00D4 0  7029                     MDX     /00FE                              8AC22460
00D5 0  7028                     MDX     /00FE                              8AC22470
00D6 0  7027                     MDX     /00FE                              8AC22480
00D7 0  7026                     MDX     /00FE                              8AC22490
                         *                                                  8AC22500
                         *                                                  8AC22510
                         *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC22520
                         *                                                * 8AC22530
                         *          CORRECTIONS FOR THE FOLLOWING 28      * 8AC22540
                         *          WORDS MUST BE MADE IN THE CARD        * 8AC22550
                         *          NUMBERED 5 OF THIS AUX PROGRAMS       * 8AC22560
                         *          7 CARD OBJECT DECK.                   * 8AC22570
                         *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC22580
                         *                                                  8AC22590
                         *                                                  8AC22600
00D8 0  7025                     MDX     /00FE                              8AC22610
00D9 0  7024                     MDX     /00FE                              8AC22620
00DA 0  7023                     MDX     /00FE                              8AC22630
00DB 0  7022                     MDX     /00FE                              8AC22640
00DC 0  7021                     MDX     /00FE                              8AC22650
00DD 0  7020                     MDX     /00FE                              8AC22660
00DE 0  701F                     MDX     /00FE                              8AC22670
00DF 0  701E                     MDX     /00FE                              8AC22680
00E0 0  701D                     MDX     /00FE                              8AC22690
00E1 0  701C                     MDX     /00FE                              8AC22700
00E2 0  701B                     MDX     /00FE                              8AC22710
00E3 0  701A                     MDX     /00FE                              8AC22720
00E4 0  7019                     MDX     /00FE                              8AC22730
00E5 0  7018                     MDX     /00FE                              8AC22740
00E6 0  7017                     MDX     /00FE                              8AC22750
00E7 0  7016                     MDX     /00FE                              8AC22760
00E8 0  7015                     MDX     /00FE                              8AC22770
00E9 0  7014                     MDX     /00FE                              8AC22780
00EA 0  7013                     MDX     /00FE                              8AC22790
00EB 0  7012                     MDX     /00FE                              8AC22800
00EC 0  7011                     MDX     /00FE                              8AC22810
00ED 0  7010                     MDX     /00FE                              8AC22820
00EE 0  700F                     MDX     /00FE                              8AC22830
00EF 0  700E                     MDX     /00FE
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AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 3RD 1053

```
00F0 0  700D            MDX     /00FE                                   8AC22840
00F1 0  700C            MDX     /00FE                                   8AC22850
00F2 0  700B            MDX     /00FE                                   8AC22860
00F3 0  700A            MDX     /00FE                                   8AC22870
00F4 0  7009            MDX     /00FE                                   8AC22880
00F5 0  7008            MDX     /00FE                                   8AC22890
00F6 0  7007            MDX     /00FE                                   8AC22900
00F7 0  7006            MDX     /00FE                                   8AC22910
00F8 0  7005            MDX     /00FE                                   8AC22920
00F9 0  7004            MDX     /00FE                                   8AC22930
00FA 0  7003            MDX     /00FE                                   8AC22940
00FB 0  7002            MDX     /00FE                                   8AC22950
00FC 0  7001            MDX     /00FE                                   8AC22960
00FD 0  7000            MDX     /00FE                                   8AC22970
                ********************************************************* 8AC22980
                *                                                       * 8AC22990
000D            QQQQ    EQU     /D          GO TO LOADER AT /D          8AC23000
7007            NNNN    EQU     /7007       FOR CARD LOADER AT /35      8AC23010
0813            WWWW    EQU     /0813       SET IN LOADER AT /04        8AC23020
7035            TTTT    EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO    8AC23030
                *                           THE BRANCH FROM THE LOADER  8AC23040
                *                           TO RETUR IN THIS PROGRAM.   8AC23050
                ********************************************************* 8AC23060
00FE    00FD            END     *-1         END CARD NEVER USED         8AC23070
```


AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 3RD 1053

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	0800	0053,0055,0057,0065
CEGO	0067	004C
CEOFF	0056	0038,005B
CEON	0054	003A,0045
CESW	0062	0041
DSW52	0052	0036,003D
MODIF	0008	0053,0055,0057,0065
NNNN	7007	0052
NOTRD	0058	0043,004E,0061,0067,0068,0069,006A,006B,006C,006D, 006E,006F,0070,0071,0072,0073,0074,0075,0076,0077, 0078,0079,007A,007B,007C,007D,007E,007F,0080,0081, 0082,0083,0084,0085,0086,0087,0088,0089,008A,008B, 008C,008D,008E,008F,0090,0091,0092,0093,0094,0095, 0096,0097,0098,0099,009A,009B,009C,009D,009E,009F, 00A0,00A1,00A2,00A3,00A4,00A5,00A6,00A7,00A8,00A9, 00AA,00AB,00AC,00AD,00AE,00AF,00B0,00B1,00B2,00B3, 00B4,00B5,00B6,00B7,00B8,00B9,00BA,00BB,00BC,00BD
OUTWD	0066	0064
QQQQ	000D	0060
RETUR	003A	00FE
SAVE2	005C	0038,0046
SAVE3	005E	003C
SENBI	0050	003F,0040,0042
STATU	0063	003E
TERM	004E	0048
TTTT	7035	0056
WRITE	0064	
WWWW	0813	0058

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 4TH 1053

```
                         ABS                                          8AC23080
028C                     ORG     /36                                  8AC23090
                    *                                                 8AC23100
                    ************************************************* 8AC23110
0800                AREA  EQU     /0800      1ST 1053 AREA CODE       8AC23120
                    *       IF THIS PROG IS TO BE USED FOR A MACH     8AC23130
                    * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH    8AC23140
                    * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST 8AC23150
                    * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A   8AC23160
                    * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG   8AC23170
                    * GENERATOR WRITE-UP FOR PROCEDURE.               8AC23180
                    *                                                 8AC23190
0010                MODIF EQU     /0010      4TH 1053 MODIFIER BIT    8AC23200
                    ************************************************* 8AC23210
                    *                                                 8AC23220
                    *                                                 8AC23230
                    *            4TH 1053 SKELETON PROGRAM            8AC23240
                    *            (SEE AUX CE PROG GENERATOR           8AC23250
                    *            * WRITE-UP FOR USE PROCEDURE)        8AC23260
                    *            ****************************         8AC23270
                    * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE      8AC23280
                    *                                                 8AC23290
                    *                                                 8AC23300
                    *                                                 8AC23310
                    *                                                 8AC23320
                    *            PURPOSE                              8AC23330
                    *               THE PURPOSE OF THIS PROGRAM IS    8AC23340
                    *               TO PROVIDE A SKELETON PROGRAM     8AC23350
                    *               UPON WHICH THE CE CAN WRITE AN    8AC23360
                    *               AUX STORAGE PROGRAM.              8AC23370
                    *                                                 8AC23380
                    *                                                 8AC23390
                    *            GENERAL INSTRUCTIONS                 8AC23400
                    *            CE SWITCH SETTINGS                   8AC23410
                    *               00001111  CE SERVICE STOP         8AC23420
                    *               11111111  TERMINATE PROGRAM       8AC23430
                    *               ALL OTHER COMBINATIONS ARE STORED 8AC23440
                    *               * AT THE LOCATION  CESW  FOR      8AC23450
                    *               * POSSIBLE USE BY THE CE TO       8AC23460
                    *               * CONTROL HIS PROGRAM             8AC23470
                    *                                                 8AC23480
                    *                                                 8AC23490
                    ************************************************* 8AC23500
                    *                                                 8AC23510
                    *                                                 8AC23520
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC23530
                    *            CORRECTIONS FOR THE FOLLOWING 27     * 8AC23540
                    *            WORDS MUST BE MADE IN THE CARD       * 8AC23550
                    *            NUMBERED X OF THIS AUX PROGRAMS      * 8AC23560
                    *            7 CARD OBJECT DECK.                  * 8AC23570
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC23580
                    *                                                 8AC23590
                    *                                                 8AC23600
                    *            AUX PROG ENTRY POINTS                8AC23610
                    *            *********************                8AC23620
                    *                                                 8AC23630
                    *            1ST PASS ENTRY                       8AC23640
                    *            **************                       8AC23650
                    *                                                 8AC23660
                    *                                                 8AC23670
0036 0  C01B            LD      DSW52      RESTORE LOC NICE           8AC23680
0037 0  00FD            STO     /35        * IN AUX LOADER            8AC23690
                    *                                                 8AC23700
0038 0  C01D            LD      CEOFF      PLACE BRANCH               8AC23710
0039 0  00CA            STO     /04        * TO RETUR LABEL           8AC23720
                    *                                                 8AC23730
                    *            ALL BUT 1ST PASS ENTRY POINT         8AC23740
                    *            ****************************         8AC23750
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AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 4TH 1053

```
003A 0  0819    RETUR XIO     CEON       SET DEVICE IN CE MODE      8AC23760
003B 0  6A21          STX   2 SAVE2+1     SAVE INDEX REGISTER 2      8AC23770
003C 0  6B22          STX   3 SAVE3+1     SAVE INDEX REGISTER 3      8AC23780
003D 0  0814          XIO     DSW52      SENSE DEVICE STATUS        8AC23790
003E 0  D024          STO     STATU      SAVE DEVICE STATUS         8AC23800
003F 0  0810          XIO     SENBI      SENSE CE PROG SW TO ACCUM  8AC23810
0040 0  E00F          AND     SENBI      BLOCK OUT PROG SEL SW      8AC23820
0041 0  D020          STO     CESW       SAVE CE PROG SW SETTINGS   8AC23830
0042 0  F00D          EOR     SENBI                                 8AC23840
0043 00 4C180058      BSC   L NOTRD,+-    BR TERMINATE PROGRAM       8AC23850
0045 0  F00E          EOR     CEON                                  8AC23860
0046 00 4C18005C      BSC   L SAVE2,+-     BR SERVICE STOP           8AC23870
0048 00 CC00004E      LDD   L TERM                                  8AC23880
004A 00 DC0000FE      STD   L /00FE      SET TERMINATOR BR AT END   8AC23890
                    *                    * OF AUX CORE AS A SAFETY  8AC23900
                    *                    * PRECAUTION               8AC23910
                    *                                               8AC23920
004C 00 4C000067      BSC   L CEGO       BR TO DO IT YOURSELF PROG  8AC23930
004E 00 4C000058    TERM  BSC   L NOTRD  TERMINATOR BRANCH          8AC23940
                    ************************************************* 8AC23950
                    *                                               8AC23960
                    *            CONSTANTS AND/OR IOCC WORDS        8AC23970
                    *                                               8AC23980
0050    0000        BSS   E 0                                       8AC23990
0050 0  00FF        SENBI DC      /00FF    TERMINATOR CONSTANT       8AC24000
                    *                                               8AC24010
                    *                                               8AC24020
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC24030
                    *            CORRECTIONS FOR THE FOLLOWING 27     * 8AC24040
                    *            WORDS MUST BE MADE IN THE CARD       * 8AC24050
                    *            NUMBERED 0 OF THIS AUX PROGRAMS      * 8AC24060
                    *            7 CARD OBJECT DECK.                  * 8AC24070
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC24080
                    *                                               8AC24090
                    *                                               8AC24100
0051 0  0760            DC        /0760    SENSE CE SWITCHES         8AC24110
0052 0  7007        DSW52 DC      NNNN                               8AC24120
0053 0  0F11          DC        /0701+AREA+MODIF RESET DEVICE STATUS 8AC24130
0054 0  00F0        CEON  DC      /00F0    CE SERVICE STOP CONST     8AC24140
0055 0  0811          DC        /0001+AREA+MODIF CE ON WORD          8AC24150
0056 0  7035        CEOFF DC      TTTT                               8AC24160
0057 0  0810          DC        /0000+AREA+MODIF CE OFF WORD         8AC24170
                    ************************************************* 8AC24180
                    *                                               8AC24190
                    *            EXIT POINTS TO AUX LOADER          8AC24200
                    *            *************************          8AC24210
                    *                                               8AC24220
                    *            TERMINATE EXIT POINT               8AC24230
0058 00 65000813    NOTRD LDX   L1 WWWW                             8AC24240
005A 0  69A9          STX   1 /04                                   8AC24250
005B 0  08FA          XIO     CEOFF      REMOVE DEVICE FROM CE MODE 8AC24260
                    *                                               8AC24270
                    *            NORMAL EXIT POINT                  8AC24280
005C 00 66000000    SAVE2 LDX   L2 0                                8AC24290
005E 00 67000000    SAVE3 LDX   L3 0                                8AC24300
                    *                                               8AC24310
0060 0  70AC          MDX       QQQQ                                8AC24320
                    ************************************************* 8AC24330
                    ************************************************* 8AC24340
                    *                                               8AC24350
                    *            THE FOLLOWING CONSTANTS AND IOCC   8AC24360
                    *            WORDS HAS BEEN PLACED HERE TO AID  8AC24370
                    *            THE CE IN HIS PROGRAMMING EFFORT.  8AC24380
                    *                                               8AC24390
0061 0  70F6          MDX       NOTRD    THIS LOC IS NOT USED      8AC24400
0062    0000        BSS   E 0                                       8AC24410
0062 0  0000        CESW  DC      0        CE PROGRAM SW SETTING     8AC24420
0063 0  0000        STATU DC      0        DEVICE STATUS WORD        8AC24430
```

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                    *                                                    8AC24440
0064 0  0066        WRITE DC      OUTWD      REFERS TO OUTPUT CHAR.      8AC24450
0065 0  0910              DC      /0100+AREA+MODIF IOCC WRITE WORD       8AC24460
                    *                                                    8AC24470
0066 0  0000        OUTWD DC      0          PLACE OUTPUT CHAR. HERE     8AC24480
                    ************************************************** 8AC24490
                    *                                                    8AC24500
                    *                                                    8AC24510
                    *                                                    8AC24520
                    *           THIS IS THE STARTING POINT OF YOUR       8AC24530
                    *           PROGRAM.                                 8AC24540
                    *                                                    8AC24550
                    *                                                    8AC24560
                    *                                                    8AC24570
                    *                                                    8AC24580
0067 0  70F0        CEGO  MDX     NOTRD      1ST LOC OF YOUR PROGRAM     8AC24590
                    *           BRANCH TO LOCATION  SAVE2   WHEN         8AC24600
                    *           EXITING FROM YOUR PROGRAM.               8AC24610
0068 0  70EF              MDX     NOTRD                                  8AC24620
0069 0  70EE              MDX     NOTRD                                  8AC24630
006A 0  70ED              MDX     NOTRD                                  8AC24640
006B 0  70EC              MDX     NOTRD                                  8AC24650
                    *                                                    8AC24660
                    *                                                    8AC24670
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC24680
                    *           CORRECTIONS FOR THE FOLLOWING 27    *    8AC24690
                    *           WORDS MUST BE MADE IN THE CARD      *    8AC24700
                    *           NUMBERED 1 OF THIS AUX PROGRAMS     *    8AC24710
                    *           7 CARD OBJECT DECK.                 *    8AC24720
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC24730
                    *                                                    8AC24740
                    *                                                    8AC24750
006C 0  70EB              MDX     NOTRD                                  8AC24760
006D 0  70EA              MDX     NOTRD                                  8AC24770
006E 0  70E9              MDX     NOTRD                                  8AC24780
006F 0  70E8              MDX     NOTRD                                  8AC24790
0070 0  70E7              MDX     NOTRD                                  8AC24800
0071 0  70E6              MDX     NOTRD                                  8AC24810
0072 0  70E5              MDX     NOTRD                                  8AC24820
0073 0  70E4              MDX     NOTRD                                  8AC24830
0074 0  70E3              MDX     NOTRD                                  8AC24840
0075 0  70E2              MDX     NOTRD                                  8AC24850
0076 0  70E1              MDX     NOTRD                                  8AC24860
0077 0  70E0              MDX     NOTRD                                  8AC24870
0078 0  70DF              MDX     NOTRD                                  8AC24880
0079 0  70DE              MDX     NOTRD                                  8AC24890
007A 0  70DD              MDX     NOTRD                                  8AC24900
007B 0  70DC              MDX     NOTRD                                  8AC24910
007C 0  70DB              MDX     NOTRD                                  8AC24920
007D 0  70DA              MDX     NOTRD                                  8AC24930
007E 0  70D9              MDX     NOTRD                                  8AC24940
007F 0  70D8              MDX     NOTRD                                  8AC24950
0080 0  70D7              MDX     NOTRD                                  8AC24960
0081 0  70D6              MDX     NOTRD                                  8AC24970
0082 0  70D5              MDX     NOTRD                                  8AC24980
0083 0  70D4              MDX     NOTRD                                  8AC24990
0084 0  70D3              MDX     NOTRD                                  8AC25000
0085 0  70D2              MDX     NOTRD                                  8AC25010
0086 0  70D1              MDX     NOTRD                                  8AC25020
                    *                                                    8AC25030
                    *                                                    8AC25040
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC25050
                    *           CORRECTIONS FOR THE FOLLOWING 27    *    8AC25060
                    *           WORDS MUST BE MADE IN THE CARD      *    8AC25070
                    *           NUMBERED 2 OF THIS AUX PROGRAMS     *    8AC25080
                    *           7 CARD OBJECT DECK.                 *    8AC25090
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC25100
                    *                                                    8AC25110
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                    *                                                    8AC25120
0087 0  70D0              MDX     NOTRD                                  8AC25130
0088 0  70CF              MDX     NOTRD                                  8AC25140
0089 0  70CE              MDX     NOTRD                                  8AC25150
008A 0  70CD              MDX     NOTRD                                  8AC25160
008B 0  70CC              MDX     NOTRD                                  8AC25170
008C 0  70CB              MDX     NOTRD                                  8AC25180
008D 0  70CA              MDX     NOTRD                                  8AC25190
008E 0  70C9              MDX     NOTRD                                  8AC25200
008F 0  70C8              MDX     NOTRD                                  8AC25210
0090 0  70C7              MDX     NOTRD                                  8AC25220
0091 0  70C6              MDX     NOTRD                                  8AC25230
0092 0  70C5              MDX     NOTRD                                  8AC25240
0093 0  70C4              MDX     NOTRD                                  8AC25250
0094 0  70C3              MDX     NOTRD                                  8AC25260
0095 0  70C2              MDX     NOTRD                                  8AC25270
0096 0  70C1              MDX     NOTRD                                  8AC25280
0097 0  70C0              MDX     NOTRD                                  8AC25290
0098 0  70BF              MDX     NOTRD                                  8AC25300
0099 0  70BE              MDX     NOTRD                                  8AC25310
009A 0  70BD              MDX     NOTRD                                  8AC25320
009B 0  70BC              MDX     NOTRD                                  8AC25330
009C 0  70BB              MDX     NOTRD                                  8AC25340
009D 0  70BA              MDX     NOTRD                                  8AC25350
009E 0  70B9              MDX     NOTRD                                  8AC25360
009F 0  70B8              MDX     NOTRD                                  8AC25370
00A0 0  70B7              MDX     NOTRD                                  8AC25380
00A1 0  70B6              MDX     NOTRD                                  8AC25390
                    *                                                    8AC25400
                    *                                                    8AC25410
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC25420
                    *           CORRECTIONS FOR THE FOLLOWING 27    *    8AC25430
                    *           WORDS MUST BE MADE IN THE CARD      *    8AC25440
                    *           NUMBERED 3 OF THIS AUX PROGRAMS     *    8AC25450
                    *           7 CARD OBJECT DECK.                 *    8AC25460
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC25470
                    *                                                    8AC25480
                    *                                                    8AC25490
00A2 0  70B5              MDX     NOTRD                                  8AC25500
00A3 0  70B4              MDX     NOTRD                                  8AC25510
00A4 0  70B3              MDX     NOTRD                                  8AC25520
00A5 0  70B2              MDX     NOTRD                                  8AC25530
00A6 0  70B1              MDX     NOTRD                                  8AC25540
00A7 0  70B0              MDX     NOTRD                                  8AC25550
00A8 0  70AF              MDX     NOTRD                                  8AC25560
00A9 0  70AE              MDX     NOTRD                                  8AC25570
00AA 0  70AD              MDX     NOTRD                                  8AC25580
00AB 0  70AC              MDX     NOTRD                                  8AC25590
00AC 0  70AB              MDX     NOTRD                                  8AC25600
00AD 0  70AA              MDX     NOTRD                                  8AC25610
00AE 0  70A9              MDX     NOTRD                                  8AC25620
00AF 0  70A8              MDX     NOTRD                                  8AC25630
00B0 0  70A7              MDX     NOTRD                                  8AC25640
00B1 0  70A6              MDX     NOTRD                                  8AC25650
00B2 0  70A5              MDX     NOTRD                                  8AC25660
00B3 0  70A4              MDX     NOTRD                                  8AC25670
00B4 0  70A3              MDX     NOTRD                                  8AC25680
00B5 0  70A2              MDX     NOTRD                                  8AC25690
00B6 0  70A1              MDX     NOTRD                                  8AC25700
00B7 0  70A0              MDX     NOTRD                                  8AC25710
00B8 0  709F              MDX     NOTRD                                  8AC25720
00B9 0  709E              MDX     NOTRD                                  8AC25730
00BA 0  709D              MDX     NOTRD                                  8AC25740
00BB 0  709C              MDX     NOTRD                                  8AC25750
00BC 0  709B              MDX     NOTRD                                  8AC25760
                    *                                                    8AC25770
                    *                                                    8AC25780
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC25790
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                        *          CORRECTIONS FOR THE FOLLOWING 27   *  8AC25800
                        *          WORDS MUST BE MADE IN THE CARD     *  8AC25810
                        *          NUMBERED 4 OF THIS AUX PROGRAMS    *  8AC25820
                        *          7 CARD OBJECT DECK.                *  8AC25830
                        *I. *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC25840
                        *                                                8AC25850
                        *                                                8AC25860
008D 0  709A            MDX     NOTRD                                    8AC25870
008E 0  703F            MDX     /00FE                                    8AC25880
008F 0  703E            MDX     /00FE                                    8AC25890
00C0 0  703D            MDX     /00FE                                    8AC25900
00C1 0  703C            MDX     /00FE                                    8AC25910
00C2 0  703B            MDX     /00FE                                    8AC25920
00C3 0  703A            MDX     /00FE                                    8AC25930
00C4 0  7039            MDX     /00FE                                    8AC25940
00C5 0  7038            MDX     /00FE                                    8AC25950
00C6 0  7037            MDX     /00FE                                    8AC25960
00C7 0  7036            MDX     /00FE                                    8AC25970
00C8 0  7035            MDX     /00FE                                    8AC25980
00C9 0  7034            MDX     /00FE                                    8AC25990
00CA 0  7033            MDX     /00FE                                    8AC26000
00CB 0  7032            MDX     /00FE                                    8AC26010
00CC 0  7031            MDX     /00FE                                    8AC26020
00CD 0  7030            MDX     /00FE                                    8AC26030
00CE 0  702F            MDX     /00FE                                    8AC26040
00CF 0  702E            MDX     /00FE                                    8AC26050
00D0 0  702D            MDX     /00FE                                    8AC26060
00D1 0  702C            MDX     /00FE                                    8AC26070
00D2 0  702B            MDX     /00FE                                    8AC26080
00D3 0  702A            MDX     /00FE                                    8AC26090
00D4 0  7029            MDX     /00FE                                    8AC26100
00D5 0  7028            MDX     /00FE                                    8AC26110
00D6 0  7027            MDX     /00FE                                    8AC26120
00D7 0  7026            MDX     /00FE                                    8AC26130
                        *                                                8AC26140
                        *                                                8AC26153
                        *IBM*IBM IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC26160
                        *          CORRECTIONS FOR THE FOLLOWING 38   *  8AC26170
                        *          WORDS MUST BE MADE IN THE CARD     *  8AC26180
                        *          NUMBERED 5 OF THIS AUX PROGRAMS    *  8AC26190
                        *          7 CARD OBJECT DECK.                *  8AC26200
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC26210
                        *                                                8AC26220
                        *                                                8AC26230
00D8 0  7025            MDX     /00FE                                    8AC26240
00D9 0  7024            MDX     /00FE                                    8AC26250
00DA 0  7023            MDX     /00FE                                    8AC26260
00DB 0  7022            MDX     /00FE                                    8AC26270
00DC 0  7021            MDX     /00FE                                    8AC26280
00DD 0  7020            MDX     /00FE                                    8AC26290
00DE 0  701F            MDX     /00FE                                    8AC26300
00DF 0  701E            MDX     /00FE                                    8AC26310
00E0 0  701D            MDX     /00FE                                    8AC26320
00E1 0  701C            MDX     /00FE                                    8AC26330
00E2 0  701B            MDX     /00FE                                    8AC26340
00E3 0  701A            MDX     /00FE                                    8AC26350
00E4 0  7019            MDX     /00FE                                    8AC26360
00E5 0  7018            MDX     /00FE                                    8AC26370
00E6 0  7017            MDX     /00FE                                    8AC26380
00E7 0  7016            MDX     /00FE                                    8AC26390
00E8 0  7015            MDX     /00FE                                    8AC26400
00E9 0  7014            MDX     /00FE                                    8AC26410
00EA 0  7013            MDX     /00FE                                    8AC26420
00EB 0  7012            MDX     /00FE                                    8AC26430
00EC 0  7011            MDX     /00FE                                    8AC26440
00ED 0  7010            MDX     /00FE                                    8AC26450
00EE 0  700F            MDX     /00FE                                    8AC26460
00EF 0  700E            MDX     /00FE                                    8AC26470
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00F0 0  700D            MDX     /00FE                                    8AC26480
00F1 0  700C            MDX     /00FE                                    8AC26490
00F2 0  700B            MDX     /00FE                                    8AC26500
00F3 0  700A            MDX     /00FE                                    8AC26510
00F4 0  7009            MDX     /00FE                                    8AC26520
00F5 0  7008            MDX     /00FE                                    8AC26530
00F6 0  7007            MDX     /00FE                                    8AC26540
00F7 0  7006            MDX     /00FE                                    8AC26550
00F8 0  7005            MDX     /00FE                                    8AC26560
00F9 0  7004            MDX     /00FE                                    8AC26570
00FA 0  7003            MDX     /00FE                                    8AC26580
00FB 0  7002            MDX     /00FE                                    8AC26590
00FC 0  7001            MDX     /00FE                                    8AC26600
00FD 0  7000            MDX     /00FE                                    8AC26610
                        *************************************************8AC26620
                        *                                                8AC26630
000D                    QQQQ    EQU     /D          GO TO LOADER AT /D   8AC26640
70D7                    NNNN    EQU     /70D7       GO TO CARD LOADER AT /35 8AC26650
0813                    WWWW    EQU     /0813       SET IN LOADER AT /04 8AC26660
7035                    TTTT    EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO 8AC26670
                        *                           THE BRANCH FROM THE LOADER 8AC26680
                        *                           TO RETUR IN THIS PROGRAM. 8AC26690
                        ************************************************* 8AC26700
00FE    00FD            END     *-1         END CARD NEVER USED          8AC26710
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 4TH 1053

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	0800	0053,0055,0057,0065
CEGO	0067	004C
CEOFF	0056	0038,005B
CEON	0054	003A,0045
CESW	0062	0041
DSW52	0052	0036,003D
MODIF	0010	0053,0055,0057,0065
NNNN	7007	0052
NOTRD	0058	0043,004E,0061,0067,0068,0069,006A,006B,006C,006D, 006E,006F,0070,0071,0072,0073,0074,0075,0076,0077, 0078,0079,007A,007B,007C,007D,007E,007F,0080,0081, 0082,0083,0084,0085,0086,0087,0088,0089,008A,008B, 008C,008D,008E,008F,0090,0091,0092,0093,0094,0095, 0096,0097,0098,0099,009A,009B,009C,009D,009E,009F, 00A0,00A1,00A2,00A3,00A4,00A5,00A6,00A7,00A8,00A9, 00AA,00AB,00AC,00AD,00AF,00AF,00B0,00B1,00B2,00B3, 00B4,00B5,00B6,00B7,00B8,00B9,00BA,00BB,00BC,00BD
OUTWD	0066	0064
QQQQ	000D	0060
RETUR	003A	COFE
SAVE2	005C	003B,C046
SAVE3	005E	003C
SENBI	0050	003F,0040,0042
STATU	0063	003E
TERM	004E	0048
TTTT	7035	0056
WRITE	0064	
WWWW	0813	0058

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1054/1055

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                        ABS                                              8AC26720
02BC                    ORG     /36                                      8AC26730
                *                                                        8AC26740
                ********************************************************* 8AC26750
1800            AREA    EQU     /1800       1ST 1054/55 AREA CODE        8AC26760
                *       IF THIS PROG IS TO BE USED FOR A MACH            8AC26770
                * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH           8AC26780
                * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST        8AC26790
                * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A          8AC26800
                * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG          8AC26810
                * GENERATOR WRITE-UP FOR PROCEDURE.                      8AC26820
                ********************************************************* 8AC26830
                *                                                        8AC26840
                *                                                        8AC26850
                *            1054/55 SKELETON PROGRAM                    8AC26860
                *            (SEE AUX CE PROG GENERATOR                  8AC26870
                *            * WRITE-UP FOR USE PROCEDURE)               8AC26880
                *            ****************************                8AC26890
                * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE            8AC26900
                *                                                        8AC26910
                *                                                        8AC26920
                *                                                        8AC26930
                *                                                        8AC26940
                *            PURPOSE                                     8AC26950
                *               THE PURPOSE OF THIS PROGRAM IS           8AC26960
                *               TO PROVIDE A SKELETON PROGRAM            8AC26970
                *               UPON WHICH THE CE CAN WRITE AN           8AC26980
                *               AUX STORAGE PROGRAM.                     8AC26990
                *                                                        8AC27000
                *                                                        8AC27010
                *            GENERAL INSTRUCTIONS                        8AC27020
                *            CE SWITCH SETTINGS                          8AC27030
                *               00001111  CE SERVICE STOP                8AC27040
                *               11111111  TERMINATE PROGRAM              8AC27050
                *               ALL OTHER COMBINATIONS ARE STORED        8AC27060
                *               * AT THE LOCATION  CESW  FOR             8AC27070
                *               * POSSIBLE USE BY THE CE TO              8AC27080
                *               * CONTROL HIS PROGRAM                    8AC27090
                *                                                        8AC27100
                *                                                        8AC27110
                ************************************************        8AC27120
                *                                                        8AC27130
                *                                                        8AC27140
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC27150
                *            CORRECTIONS FOR THE FOLLOWING 27    *       8AC27160
                *            WORDS MUST BE MADE IN THE CARD      *       8AC27170
                *            NUMBERED X OF THIS AUX PROGRAMS     *       8AC27180
                *            7 CARD OBJECT DECK.                 *       8AC27190
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC27200
                *                                                        8AC27210
                *                                                        8AC27220
                *                                                        8AC27230
                *            AUX PROG ENTRY POINTS                       8AC27240
                *            *********************                       8AC27250
                *                                                        8AC27260
                *            1ST PASS ENTRY                              8AC27270
                *            **************                              8AC27280
                *                                                        8AC27290
0036 0  C01B            LD      DSW52       RESTORE LOC NICE            8AC27300
0037 0  D0FD            STO     /35         * IN AUX LOADER             8AC27310
                *                                                        8AC27320
0038 0  C01D            LD      CEOFF       PLACE BRANCH                8AC27330
0039 0  D0CA            STO     /04         * TO RETUR LABEL            8AC27340
                *                                                        8AC27350
                *            ALL BUT 1ST PASS ENTRY POINT                8AC27360
                *            ***************************                 8AC27370
003A 0  0819    RETUR   XIO     CEON        SET DEVICE IN CE MODE       8AC27380
003B 0  6A21            STX   2 SAVE2+1     SAVE INDEX REGISTER 2       8AC27390
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003C 0  6B22            STX   3 SAVE3+1    SAVE INDEX REGISTER 3       8AC27400
003D 0  0814            XIO     DSW52      SENSE DEVICE STATUS         8AC27410
003E 0  D024            STO     STATU      SAVE DEVICE STATUS          8AC27420
003F 0  0810            XIO     SENBI      SENSE CE PROG SW TO ACCUM   8AC27430
0040 0  E00F            AND     SENBI      BLOCK OUT PROG SEL SW       8AC27440
0041 0  D020            STO     CESW       SAVE CE PROG SW SETTINGS    8AC27450
0042 0  F00D            EOR     SENBI                                  8AC27460
0043 00 4C180058        BSC  L  NOTRD,+-   BR TERMINATE PROGRAM       8AC27470
0045 0  F00E            EOR     CEON                                   8AC27480
0046 00 4C18005C        BSC  L  SAVE2,+-    BR SERVICE STOP            8AC27490
0048 00 CC00004E        LDD  L  TERM                                   8AC27500
004A 00 DC0000FE        STD  L  /00FE      SET TERMINATOR BR AT END    8AC27510
                        *                  * OF AUX CORE AS A SAFETY   8AC27520
                        *                  * PRECAUTION                8AC27530
                        *                                              8AC27540
004C 00 4C000060        BSC  L  CEGO       BR TO DO IT YOURSELF PROG   8AC27550
004F 00 4C000058  TERM  BSC  L  NOTRD      TERMINATOR BRANCH           8AC27560
                        ********************************************** 8AC27570
                        *                                              8AC27580
                        *          CONSTANTS AND/OR IOCC WORDS         8AC27590
0050    0000            BSS  E  0                                      8AC27600
0050 0  00FF      SENBI DC      /00FF      TERMINATOR CONSTANT         8AC27610
                        *                                              8AC27620
                        *                                              8AC27630
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC27640
                        *          CORRECTIONS FOR THE FOLLOWING 27    * 8AC27650
                        *          WORDS MUST BE MADE IN THE CARD      * 8AC27660
                        *          NUMBERED 0 OF THIS AUX PROGRAMS     * 8AC27670
                        *          7 CARD OBJECT DECK.                 * 8AC27680
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC27690
                        *                                              8AC27700
                        *                                              8AC27710
0051 0  0760            DC      /0760      SENSE CE SWITCHES           8AC27720
0052 0  70D7      DSW52 DC      NNNN                                   8AC27730
0053 0  1F01            DC      /0701+AREA RESET DEVICE STATUS IOCC    8AC27740
0054 0  00F0      CEON  DC      /00F0      CE SERVICE STOP CONST       8AC27750
0055 0  1801            DC      /0001+AREA CE ON WORD                  8AC27760
0056 0  7035      CEOFF DC      TTTT                                   8AC27770
0057 0  1800            DC      /0000+AREA CE OFF WORD                 8AC27780
                        ********************************************** 8AC27790
                        *                                              8AC27800
                        *          EXIT POINTS TO AUX LOADER           8AC27810
                        *          ************************            8AC27820
                        *                                              8AC27830
                        *          TERMINATE EXIT POINT                8AC27840
0058 00 65000813  NOTRD LDX  L1 WWWW                                   8AC27850
005A 0  69A9            STX   1 /04                                    8AC27860
005B 0  08FA            XIO     CEOFF      REMOVE DEVICE FROM CE MODE  8AC27870
                        *                                              8AC27880
                        *          NORMAL EXIT POINT                   8AC27890
005C 00 66000000  SAVE2 LDX  L2 0                                      8AC27900
005E 00 67000000  SAVE3 LDX  L3 0                                      8AC27910
                        *                                              8AC27920
0060 0  70AC            MDX     QQQQ                                   8AC27930
                        ********************************************** 8AC27940
                        ********************************************** 8AC27950
                        ********************************************** 8AC27960
                        *                                              8AC27970
                        *          THE FOLLOWING CONSTANTS AND IOCC    8AC27980
                        *          WORDS HAS BEEN PLACED HERE TO AID   8AC27990
                        *          THE CE IN HIS PROGRAMMING EFFORT.   8AC28000
                        *                                              8AC28010
0061 0  70F6            MDX     NOTRD      THIS LOC IS NOT USED        8AC28020
0062    0000            BSS  E  0                                      8AC28030
0062 0  0000      CESW  DC      0          CE PROGRAM SW SETTING       8AC28040
0063 0  0000      STATU DC      0          DEVICE STATUS WORD          8AC28050
                        *                                              8AC28060
0064 0  0068      WRITE DC      OUTWD      REFERS TO OUTPUT CHAR       8AC28070
```



```
0065 0  1900            DC      /0100+AREA IOCC WRITE WORD             8AC28080
                        *                                              8AC28090
0066 0  006A      READ  DC      INWD       REFERS TO INPUT WD LOC.     8AC28100
0067 0  1A00            DC      /0200+AREA IOCC READ WORD              8AC28110
                        *                                              8AC28120
0068 0  70EF      CTRL  MDX     NOTRD      THIS LOC IS NOT USED        8AC28130
0069 0  1C10            DC      /0410+AREA IOCC CONTROL WORD           8AC28140
                        *                                              8AC28150
006A 0  0000      INWD  DC      0          LOCATION OF CHAR READ       8AC28160
006B 0  0000      OUTWD DC      0          LOCATION OF OUTPUT COMMAND  8AC28170
                        ********************************************** 8AC28180
                        *                                              8AC28190
                        *                                              8AC28200
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC28210
                        *          CORRECTIONS FOR THE FOLLOWING 27    * 8AC28220
                        *          WORDS MUST BE MADE IN THE CARD      * 8AC28230
                        *          NUMBERED 1 OF THIS AUX PROGRAMS     * 8AC28240
                        *          7 CARD OBJECT DECK.                 * 8AC28250
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC28260
                        *                                              8AC28270
                        *                                              8AC28280
                        *                                              8AC28290
                        *                                              8AC28300
                        *                                              8AC28310
                        *          THIS IS THE STARTING POINT OF YOUR  8AC28320
                        *          PROGRAM.                            8AC28330
                        *                                              8AC28340
                        *                                              8AC28350
                        *                                              8AC28360
                        *                                              8AC28370
006C 0  70E8      CEGO  MDX     NOTRD      1ST LOC OF YOUR PROGRAM     8AC28380
                        *          BRANCH TO LOCATION SAVE2 WHEN       8AC28390
                        *          EXITING FROM YOUR PROGRAM.          8AC28400
006D 0  70EA            MDX     NOTRD                                  8AC28410
006E 0  70E9            MDX     NOTRD                                  8AC28420
006F 0  70E8            MDX     NOTRD                                  8AC28430
0070 0  70E7            MDX     NOTRD                                  8AC28440
0071 0  70E6            MDX     NOTRD                                  8AC28450
0072 0  70E5            MDX     NOTRD                                  8AC28460
0073 0  70E4            MDX     NOTRD                                  8AC28470
0074 0  70E3            MDX     NOTRD                                  8AC28480
0075 0  70E2            MDX     NOTRD                                  8AC28490
0076 0  70E1            MDX     NOTRD                                  8AC28500
0077 0  70E0            MDX     NOTRD                                  8AC28510
0078 0  70DF            MDX     NOTRD                                  8AC28520
0079 0  70DE            MDX     NOTRD                                  8AC28530
007A 0  70DD            MDX     NOTRD                                  8AC28540
007B 0  70DC            MDX     NOTRD                                  8AC28550
007C 0  70DB            MDX     NOTRD                                  8AC28560
007D 0  70DA            MDX     NOTRD                                  8AC28570
007E 0  70D9            MDX     NOTRD                                  8AC28580
007F 0  70D8            MDX     NOTRD                                  8AC28590
0080 0  70D7            MDX     NOTRD                                  8AC28600
0081 0  70D6            MDX     NOTRD                                  8AC28610
0082 0  70D5            MDX     NOTRD                                  8AC28620
0083 0  70D4            MDX     NOTRD                                  8AC28630
0084 0  70D3            MDX     NOTRD                                  8AC28640
0085 0  70D2            MDX     NOTRD                                  8AC28650
0086 0  70D1            MDX     NOTRD                                  8AC28660
                        *                                              8AC28670
                        *                                              8AC28680
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC28690
                        *          CORRECTIONS FOR THE FOLLOWING 27    * 8AC28700
                        *          WORDS MUST BE MADE IN THE CARD      * 8AC28710
                        *          NUMBERED 2 OF THIS AUX PROGRAMS     * 8AC28720
                        *          7 CARD OBJECT DECK.                 * 8AC28730
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC28740
                        *                                              8AC28750
```

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                                                                        8AC28760
                                                                        8AC28770
0087 0  70D0            MDX     NOTRD                                   8AC28780
0088 0  70CF            MDX     NOTRD                                   8AC28790
0089 0  70CE            MDX     NOTRD                                   8AC28800
008A 0  70CD            MDX     NOTRD                                   8AC28810
008B 0  70CC            MDX     NOTRD                                   8AC28820
008C 0  70CB            MDX     NOTRD                                   8AC28830
008D 0  70CA            MDX     NOTRD                                   8AC28840
008E 0  70C9            MDX     NOTRD                                   8AC28850
008F 0  70C8            MDX     NOTRD                                   8AC28860
0090 0  70C7            MDX     NOTRD                                   8AC28870
0091 0  70C6            MDX     NOTRD                                   8AC28880
0092 0  70C5            MDX     NOTRD                                   8AC28890
0093 0  70C4            MDX     NOTRD                                   8AC28900
0094 0  70C3            MDX     NOTRD                                   8AC28910
0095 0  70C2            MDX     NOTRD                                   8AC28920
0096 0  70C1            MDX     NOTRD                                   8AC28930
0097 0  70C0            MDX     NOTRD                                   8AC28940
0098 0  70BF            MDX     NOTRD                                   8AC28950
0099 0  70BE            MDX     NOTRD                                   8AC28960
009A 0  70BD            MDX     NOTRD                                   8AC28970
009B 0  70BC            MDX     NOTRD                                   8AC28980
009C 0  70BB            MDX     NOTRD                                   8AC28990
009D 0  70BA            MDX     NOTRD                                   8AC29000
009E 0  70B9            MDX     NOTRD                                   8AC29010
009F 0  70B8            MDX     NOTRD                                   8AC29020
00A0 0  70B7            MDX     NOTRD                                   8AC29030
0041 0  7086            MDX     NOTRD                                   8AC29040
                *                                                       8AC29050
                *                                                       8AC29060
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC29070
                *           CORRECTIONS FOR THE FOLLOWING 27    *       8AC29080
                *           WORDS MUST BE MADE IN THE CARD      *       8AC29090
                *           NUMBERED 3 OF THIS AUX PROGRAMS     *       8AC29100
                *           7 CARD OBJECT DECK.                 *       8AC29110
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC29120
                *                                                       8AC29130
                *                                                       8AC29140
00A2 0  70B5            MDX     NOTRD                                   8AC29150
00A3 0  70B4            MDX     NOTRD                                   8AC29160
00A4 0  70B3            MDX     NOTRD                                   8AC29170
00A5 0  70B2            MDX     NOTRD                                   8AC29180
00A6 0  70B1            MDX     NOTRD                                   8AC29190
00A7 0  70B0            MDX     NOTRD                                   8AC29200
00A8 0  70AF            MDX     NOTRD                                   8AC29210
00A9 0  70AE            MDX     NOTRD                                   8AC29220
00AA 0  70AD            MDX     NOTRD                                   8AC29230
00AB 0  70AC            MDX     NOTRD                                   8AC29240
00AC 0  70AB            MDX     NOTRD                                   8AC29250
00AD 0  70AA            MDX     NOTRD                                   8AC29260
00AE 0  70A9            MDX     NOTRD                                   8AC29270
00AF 0  70A8            MDX     NOTRD                                   8AC29280
0080 0  70A7            MDX     NOTRD                                   8AC29290
00B1 0  70A6            MDX     NOTRD                                   8AC29300
00B2 0  70A5            MDX     NOTRD                                   8AC29310
00B3 0  70A4            MDX     NOTRD                                   8AC29320
00B4 0  70A3            MDX     NOTRD                                   8AC29330
0085 0  70A2            MDX     NOTRD                                   8AC29340
0086 0  70A1            MDX     NOTRD                                   8AC29350
0087 0  70A0            MDX     NOTRD                                   8AC29360
0088 0  709F            MDX     NOTRD                                   8AC29370
0089 0  709E            MDX     NOTRD                                   8AC29380
008A 0  709D            MDX     NOTRD                                   8AC29390
008B 0  709C            MDX     NOTRD                                   8AC29400
008C 0  7098            MDX     NOTRD                                   8AC29410
                *                                                       8AC29420
                *                                                       8AC29430
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC29440
```



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                *           CORRECTIONS FOR THE FOLLOWING 27    *       8AC29440
                *           WORDS MUST BE MADE IN THE CARD      *       8AC29450
                *           NUMBERED 4 OF THIS AUX PROGRAMS     *       8AC29460
                *           7 CARD OBJECT DECK.                 *       8AC29470
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC29480
                *                                                       8AC29490
                *                                                       8AC29500
008D 0  709A            MDX     NOTRD                                   8AC29510
003E 0  7099            MDX     NOTRD                                   8AC29520
008F 0  7098            MDX     NOTRD                                   8AC29530
00C0 0  7097            MDX     NOTRD                                   8AC29540
00C1 0  7096            MDX     NOTRD                                   8AC29550
00C2 0  7095            MDX     NOTRD                                   8AC29560
00C3 0  703A            MDX     /00FE                                   8AC29570
00C4 0  7039            MDX     /00FE                                   8AC29580
00C5 0  7038            MDX     /00FE                                   8AC29590
00C6 0  7037            MDX     /00FE                                   8AC29600
00C7 0  7036            MDX     /00FE                                   8AC29610
00C8 0  7035            MDX     /00FE                                   8AC29620
00C9 0  7034            MDX     /00FE                                   8AC29630
00CA 0  7033            MDX     /00FE                                   8AC29640
00CB 0  7032            MDX     /00FE                                   8AC29650
00CC 0  7031            MDX     /00FE                                   8AC29660
00CD 0  7030            MDX     /00FE                                   8AC29670
00CE 0  702F            MDX     /00FE                                   8AC29680
00CF 0  702E            MDX     /00FE                                   8AC29690
00D0 0  702D            MDX     /00FE                                   8AC29700
00D1 0  702C            MDX     /00FE                                   8AC29710
00D2 0  702B            MDX     /00FE                                   8AC29720
00D3 0  702A            MDX     /00FE                                   8AC29730
00D4 0  7029            MDX     /00FE                                   8AC29740
00D5 0  7028            MDX     /00FE                                   8AC29750
00D6 0  7027            MDX     /00FE                                   8AC29760
00D7 0  7026            MDX     /00FE                                   8AC29770
                *                                                       8AC29780
                *                                                       8AC29790
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC29800
                *           CORRECTIONS FOR THE FOLLOWING 38    *       8AC29810
                *           WORDS MUST BE MADE IN THE CARD      *       8AC29820
                *           NUMBERED 5 OF THIS AUX PROGRAMS     *       8AC29830
                *           7 CARD OBJECT DECK.                 *       8AC29840
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC29850
                *                                                       8AC29860
                *                                                       8AC29870
00D8 0  7025            MDX     /00FE                                   8AC29880
00D9 0  7024            MDX     /00FE                                   8AC29890
00DA 0  7023            MDX     /00FE                                   8AC29900
00DB 0  7022            MDX     /00FE                                   8AC29910
00DC 0  7021            MDX     /00FE                                   8AC29920
00DD 0  7020            MDX     /00FE                                   8AC29930
00DE 0  701F            MDX     /00FE                                   8AC29940
00DF 0  701E            MDX     /00FE                                   8AC29950
00E0 0  701D            MDX     /00FE                                   8AC29960
00E1 0  701C            MDX     /00FE                                   8AC29970
00E2 0  701B            MDX     /00FE                                   8AC29980
00E3 0  701A            MDX     /00FE                                   8AC29990
00E4 0  7019            MDX     /00FE                                   8AC30000
00E5 0  7018            MDX     /00FE                                   8AC30010
00E6 0  7017            MDX     /00FE                                   8AC30020
00E7 0  7016            MDX     /00FE                                   8AC30030
00E8 0  7015            MDX     /00FE                                   8AC30040
00E9 0  7014            MDX     /00FE                                   8AC30050
00EA 0  7013            MDX     /00FE                                   8AC30060
00EB 0  7012            MDX     /00FE                                   8AC30070
00EC 0  7011            MDX     /00FE                                   8AC30080
00ED 0  7010            MDX     /00FE                                   8AC30090
00EE 0  700F            MDX     /00FE                                   8AC30100
00EF 0  700E            MDX     /00FE                                   8AC30110
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AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1054/1055

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00F0 0  700D            MDX     /00FE                                   8AC30120
00F1 0  700C            MDX     /00FE                                   8AC30130
00F2 0  700B            MDX     /00FE                                   8AC30140
00F3 0  700A            MDX     /00FE                                   8AC30150
00F4 0  7009            MDX     /00FE                                   8AC30160
00F5 0  7008            MDX     /00FE                                   8AC30170
00F6 0  7007            MDX     /00FE                                   8AC30180
00F7 0  7006            MDX     /00FE                                   8AC30190
00F8 0  7005            MDX     /00FE                                   8AC30200
00F9 0  7004            MDX     /00FE                                   8AC30210
00FA 0  7003            MDX     /00FE                                   8AC30220
00FB 0  7002            MDX     /00FE                                   8AC30230
00FC 0  7001            MDX     /00FE                                   8AC30240
00FD 0  7000            MDX     /00FE                                   8AC30250
                *************************************************       8AC30260
                *                                                       8AC30270
000D            QQQQ    EQU     /D          GO TO LOADER AT /D          8AC30280
70D7            NNNN    EQU     /70D7       FOR CARD LOADER AT /35      8AC30290
0813            WWWW    EQU     /0813       SET IN LOADER AT /04        8AC30300
7035            TTTT    EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO    8AC30310
                *                           THE BRANCH FROM THE LOADER  8AC30320
                *                           TO RETUR IN THIS PROGRAM.   8AC30330
                *************************************************       8AC30340
00FE    00FD            END     *-1         END CARD NEVER USED         8AC30350
```


AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1054/1055

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	1800	0053,0055,0057,0065,0067,0069
CEGO	006C	004C
CEOFF	0056	0038,0058
CEON	0054	003A,0045
CESW	0062	0041
CTRL	0068	
DSW52	0052	0036,003D
INWD	006A	0066
NNNN	70D7	0052
NOTRD	0058	0043,004E,0061,0068,006C,006D,006E,006F,0070,0071, 0072,0073,0074,0075,0076,0077,0078,0079,007A,007B, 007C,007D,007E,007F,0080,0081,0082,0083,0084,0085, 0086,0087,0088,0089,008A,008B,008C,008D,008E,008F, 0090,0091,0092,0093,0094,0095,0096,0097,0098,0099, 009A,009B,009C,009D,009E,009F,00A0,00A1,00A2,00A3, 00A4,00A5,00A6,00A7,00A8,00A9,00AA,00AB,00AC,00AD, 00AE,00AF,00B0,00B1,00B2,00B3,00B4,00B5,00B6,00B7, 00B8,00B9,00BA,00BB,00BC,00BD,00BE,00BF,00C0,00C1, 00C2
OUTWD	0068	0064
QQQQ	000D	0060
READ	0066	
RETUR	003A	00FE
SAVE2	005C	0038,0046
SAVE3	005E	003C
SENBI	0050	003F,0040,0042
STATU	0063	003E
TERM	004E	0048
TTTT	7035	0056
WRITE	0064	
WWWW	0813	0058

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                        ABS                                              8AC30360
028C                    ORG     /36                                      8AC30370
                    *                                                    8AC30380
                    ******************************************************8AC30390
1000                AREA  EQU     /1000       1ST 1442 AREA CODE         8AC30400
                    *         IF THIS PROG IS TO BE USED FOR A MACH      8AC30410
                    * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH       8AC30420
                    * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST    8AC30430
                    * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A      8AC3044C
                    * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG      8AC30450
                    * GENERATOR WRITE-UP FOR PROCEDURE.                  8AC30460
                    ******************************************************8AC30470
                    *                                                    8AC30480
                    *                                                    8AC30490
                    *             1442 SKELETON PROGRAM                  8AC30500
                    *             (SEE AUX CE PROG GENERATOR             8AC30510
                    *             * WRITE-UP FOR USE PROCEDURE)          8AC30520
                    *             ****************************           8AC30530
                    * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE        8AC30540
                    *                                                    8AC30550
                    *                                                    8AC30560
                    *                                                    8AC30570
                    *                                                    8AC30580
                    *             PURPOSE                                8AC30590
                    *                THE PURPOSE OF THIS PROGRAM IS      8AC30600
                    *                TO PROVIDE A SKELETON PROGRAM       8AC30610
                    *                UPON WHICH THE CE CAN WRITE AN      8AC30620
                    *                AUX STORAGE PROGRAM.                8AC30630
                    *                                                    8AC30640
                    *                                                    8AC30650
                    *             GENERAL INSTRUCTIONS                   8AC30660
                    *             CE SWITCH SETTINGS                     8AC30670
                    *                00001111  CE SERVICE STOP           8AC30680
                    *                11111111  TERMINATE PROGRAM         8AC30690
                    *                ALL OTHER COMBINATIONS ARE STORED   8AC30700
                    *                * AT THE LOCATION  CESW  FOR        8AC30710
                    *                * POSSIBLE USE BY THE CE TO         8AC30720
                    *                * CONTROL HIS PROGRAM               8AC30730
                    *                                                    8AC30740
                    *                                                    8AC30750
                    ******************************************************8AC30760
                    *                                                    8AC30770
                    *                                                    8AC30780
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC30790
                    *             CORRECTIONS FOR THE FOLLOWING 27    *  8AC30800
                    *             WORDS MUST BE MADE IN THE CARD      *  8AC30810
                    *             NUMBERED X OF THIS AUX PROGRAMS     *  8AC30820
                    *             7 CARD OBJECT DECK.                 *  8AC30830
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC30840
                    *                                                    8AC30850
                    *                                                    8AC30860
                    *             AUX PROG ENTRY POINTS                  8AC30870
                    *             *********************                  8AC30880
                    *                                                    8AC30890
                    *             1ST PASS ENTRY                         8AC30900
                    *             **************                         8AC30910
                    *                                                    8AC30920
0036 0  C01B            LD      DSW52       RESTORE LOC NICE             8AC30930
0037 0  D0FD            STO     /35         * IN AUX LOADER              8AC30940
                    *                                                    8AC30950
0038 0  C01D            LD      CEOFF       PLACE BRANCH                 8AC30960
0039 0  D0CA            STO     /04         * TO RETUR LABEL             8AC30970
                    *                                                    8AC30980
                    *             ALL BUT 1ST PASS ENTRY POINT           8AC30990
                    *             ****************************           8AC31000
003A 0  0819        RETUR XIO     CEON      SET DEVICE IN CE MODE        8AC31010
003B 0  6A21            STX   2 SAVE2+1     SAVE INDEX REGISTER 2        8AC31020
                                                                         8AC31030
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003C 0  6B22            STX   3 SAVE3+1   SAVE INDEX REGISTER 3        8AC31040
003D 0  0814            XIO     DSW52     SENSE DEVICE STATUS          8AC31050
003E 0  D024            STO     STATU     SAVE DEVICE STATUS           8AC31060
003F 0  0810            XIO     SENBI     SENSE CE PROG SW TO ACCUM    8AC31070
0040 0  E00F            AND     SENBI     BLOCK OUT PROG SEL SW        8AC31080
0041 0  D020            STO     CESW      SAVE CE PROG SW SETTINGS     8AC31090
0042 0  F00D            EOR     SENBI                                  8AC31100
0043 00 4C180058        BSC   L NOTRD,+-    BR TERMINATE PROGRAM         8AC31110
0045 0  F00E            EOR     CEON                                   8AC31120
0046 00 4C18005C        BSC   L SAVE2,+-     BR SERVICE STOP           8AC31130
0048 00 CC00004E        LDD   L TERM                                   8AC31140
004A 00 DC0000FE        STD   L /00FE       SET TERMINATOR BR AT END     8AC31150
                    *                       * OF AUX CORE AS A SAFETY  8AC31160
                    *                       * PRECAUTION               8AC31170
                    *                                                  8AC31180
004C 00 4C00006E        BSC   L CEGO        BR TO DO IT YOURSELF PROG    8AC31190
004E 00 4C000058    TERM BSC  L NOTRD       TERMINATOR BRANCH            8AC31200
                    ******************************************************8AC31210
                    *                                                    8AC31220
                    *             CONSTANTS AND/OR IOCC WORDS            8AC31230
0050    0000            BSS   E 0                                        8AC31240
0050 0  00FF        SENBI DC      /00FF     TERMINATOR CONSTANT          8AC31250
                    *                                                    8AC31260
                    *                                                    8AC31270
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC31280
                    *             CORRECTIONS FOR THE FOLLOWING 27    *  8AC31290
                    *             WORDS MUST BE MADE IN THE CARD      *  8AC31300
                    *             NUMBERED 0 OF THIS AUX PROGRAMS     *  8AC31310
                    *             7 CARD OBJECT DECK.                 *  8AC31320
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I   8AC31330
                    *                                                    8AC31340
                    *                                                    8AC31350
0051 0  0760        DSW52 DC      /0760     SENSE CE SWITCHES            8AC31360
0052 0  7007            DC        NNNN                                   8AC31370
0053 0  1701            DC        /0701+AREA RESET DEVICE STATUS IOCC    8AC31380
0054 0  00F0        CEON  DC      /00F0     CE SERVICE STOP CONST        8AC31390
0055 0  1001            DC        /0001+AREA CE ON WORD                  8AC31400
0056 0  7035        CEOFF DC      TTTT                                   8AC31410
0057 0  1000            DC        /0000+AREA CE OFF WORD                 8AC31420
                    ******************************************************8AC31430
                    *                                                    8AC31440
                    *             EXIT POINTS TO AUX LOADER              8AC31450
                    *             **************************             8AC31460
                    *                                                    8AC31470
                    *             TERMINATE EXIT POINT                   8AC3148C
0058 00 65000813    NOTRD LDX   L1 WWWW                                  8AC31490
005A 0  69A9            STX     1 /04                                    8AC31500
005B 0  08FA            XIO       CEOFF     REMOVE DEVICE FROM CE MODE   8AC31510
                    *                                                    8AC31520
                    *             NORMAL EXIT POINT                      8AC31530
005C 00 66000000    SAVE2 LDX   L2 0                                     8AC31540
005E 00 67000000    SAVE3 LDX   L3 0                                     8AC31550
                    *                                                    8AC31560
0060 0  70AC            MDX       QQQQ                                   8AC31570
                    ******************************************************8AC31580
                    ******************************************************8AC31590
                    ******************************************************8AC31600
                    *                                                    8AC31610
                    *             THE FOLLOWING CONSTANTS AND IOCC       8AC31620
                    *             WORDS HAS BEEN PLACED HERE TO AID      8AC31630
                    *             THE CE IN HIS PROGRAMMING EFFORT.      8AC31540
                    *                                                    8AC31650
0061 0  70F6            MDX       NOTRD     THIS LOC IS NOT USED         8AC31660
0062    0000            BSS   E 0                                        8AC31670
0062 0  0000        CESW  DC      0         CE PROGRAM SW SETTING        8AC31680
0063 0  0000        STATU DC      0         DEVICE STATUS WORD           8AC31690
                    *                                                    8AC31700
0064 0  00D6        RED88 DC      /D6       40 WD READ IN TABLE          8AC31710
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```
                        *                              * LOCATED AT D6 THRU FD    8AC31720
0065 0  1601            REC01 DC       /0601+AREA IOCC INIT READ PACKED MODE  8AC31730
                        *                                                     8AC31740
0066 0  00AE            REC12 DC       /AE         80 WD READ IN TABLE        8AC31750
                        *                              * LOCATED AT AE THRU FD    8AC31760
0067 0  1600                  DC       /0600+AREA IOCC INIT READ IMAGE MODE   8AC31770
                        *                                                     8AC31780
0068 0  00AE            WRITE DC       /AE         80 WD OUTPUT TABLE         8AC31790
                        *                              * LOCATED AT AE THRU FD    8AC31800
0069 0  1500                  DC       /0500+AREA IOCC INIT WRITE WORD        8AC31810
                        *                                                     8AC31820
006A 0  70ED            STACK MDX      NOTRD       THIS LOC NOT USED          8AC31830
006B 0  1480                  DC       /0480+AREA IOCC SELECT STACKER WORD    8AC31840
                        *                                                     8AC31850
                        *                                                     8AC31860
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I    8AC31870
                        *              CORRECTIONS FOR THE FOLLOWING 27    *  8AC31880
                        *              WORDS MUST BE MADE IN THE CARD      *  8AC31890
                        *              NUMBERED 1 OF THIS AUX PROGRAMS     *  8AC31900
                        *              7 CARD OBJECT DECK.                 *  8AC31910
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I    8AC31920
                        *                                                     8AC31930
                        *                                                     8AC31940
006C 0  70EB            FEED  MDX      NOTRD       THIS LOCATION IS NOT USED  8AC31950
006D 0  1402                  DC       /0402+AREA IOCC FEED CARD WORD         8AC31960
                        ************************************************     8AC31970
                        *                                                     8AC31980
                        *                                                     8AC31990
                        *                                                     8AC32000
                        *              THIS IS THE STARTING POINT OF YOUR     8AC32010
                        *              PROGRAM.                               8AC32020
                        *                                                     8AC32030
                        *                                                     8AC32040
                        *                                                     8AC32050
                        *                                                     8AC32060
006E 0  70E9            CEGO  MDX      NOTRD       1ST LOC OF YOUR PROGRAM    8AC32070
                        *              BRANCH TO LOCATION  SAVE2   WHEN       8AC32080
                        *              EXITING FROM YOUR PROGRAM.             8AC32090
006F 0  70E8                  MDX      NOTRD                                  8AC32100
0070 0  70E7                  MDX      NOTRD                                  8AC32110
0071 0  70E6                  MDX      NOTRD                                  8AC32120
0072 0  70E5                  MDX      NOTRD                                  8AC32130
0073 0  70E4                  MDX      NOTRD                                  8AC32140
0074 0  70E3                  MDX      NOTRD                                  8AC32150
0075 0  70E2                  MDX      NOTRD                                  8AC32160
0076 0  70E1                  MDX      NOTRD                                  8AC32170
0077 0  70E0                  MDX      NOTRD                                  8AC32180
0078 0  70DF                  MDX      NOTRD                                  8AC32190
0079 0  70DE                  MDX      NOTRD                                  8AC32200
007A 0  70DD                  MDX      NOTRD                                  8AC32210
007B 0  70DC                  MDX      NOTRD                                  8AC32220
007C 0  70DB                  MDX      NOTRD                                  8AC32230
007D 0  70DA                  MDX      NOTRD                                  8AC32240
007E 0  70D9                  MDX      NOTRD                                  8AC32250
007F 0  70D8                  MDX      NOTRD                                  8AC32260
0080 0  70D7                  MDX      NOTRD                                  8AC32270
0081 0  70D6                  MDX      NOTRD                                  8AC32280
0082 0  70D5                  MDX      NOTRD                                  8AC32290
0083 0  70D4                  MDX      NOTRD                                  8AC32300
0084 0  70D3                  MDX      NOTRD                                  8AC32310
0085 0  70D2                  MDX      NOTRD                                  8AC32320
0086 0  70D1                  MDX      NOTRD                                  8AC32330
                        *                                                     8AC32340
                        *                                                     8AC32350
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I    8AC32360
                        *              CORRECTIONS FOR THE FOLLOWING 27    *  8AC32370
                        *              WORDS MUST BE MADE IN THE CARD      *  8AC32380
                        *              NUMBERED 2 OF THIS AUX PROGRAMS     *  8AC32390
```



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                        *              7 CARD OBJECT DECK.                 *  8AC32400
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I    8AC32410
                        *                                                     8AC32420
                        *                                                     8AC32430
0087 0  70D0                  MDX      NOTRD                                  8AC32440
0088 0  70CF                  MDX      NOTRD                                  8AC32450
0089 0  70CE                  MDX      NOTRD                                  8AC32460
008A 0  70CD                  MDX      NOTRD                                  8AC32470
008B 0  70CC                  MDX      NOTRD                                  8AC32480
008C 0  70CB                  MDX      NOTRD                                  8AC32490
008D 0  70CA                  MDX      NOTRD                                  8AC32500
008E 0  70C9                  MDX      NOTRD                                  8AC32510
008F 0  70C8                  MDX      NOTRD                                  8AC32520
0090 0  70C7                  MDX      NOTRD                                  8AC32530
0091 0  70C6                  MDX      NOTRD                                  8AC32540
0092 0  70C5                  MDX      NOTRD                                  8AC32550
0093 0  70C4                  MDX      NOTRD                                  8AC32560
0094 0  70C3                  MDX      NOTRD                                  8AC32570
0095 0  70C2                  MDX      NOTRD                                  8AC32580
0096 0  70C1                  MDX      NOTRD                                  8AC32590
0097 0  70C0                  MDX      NOTRD                                  8AC32600
0098 0  70BF                  MDX      NOTRD                                  8AC32610
0099 0  70BE                  MDX      NOTRD                                  8AC32620
009A 0  70BD                  MDX      NOTRD                                  8AC32630
009B 0  70BC                  MDX      NOTRD                                  8AC32640
009C 0  70BB                  MDX      NOTRD                                  8AC32650
009D 0  70BA                  MDX      NOTRD                                  8AC32660
009E 0  70B9                  MDX      NOTRD                                  8AC32670
009F 0  70B8                  MDX      NOTRD                                  8AC32680
00A0 0  70B7                  MDX      NOTRD                                  8AC32690
00A1 0  70B6                  MDX      NOTRD                                  8AC32700
                        *                                                     8AC32710
                        *                                                     8AC32720
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I    8AC32730
                        *              CORRECTIONS FOR THE FOLLOWING 27    *  8AC32740
                        *              WORDS MUST BE MADE IN THE CARD      *  8AC32750
                        *              NUMBERED 3 OF THIS AUX PROGRAMS     *  8AC32760
                        *              7 CARD OBJECT DECK.                 *  8AC32770
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I    8AC32780
                        *                                                     8AC32790
                        *                                                     8AC32800
00A2 0  70B5                  MDX      NOTRD                                  8AC32810
00A3 0  70B4                  MDX      NOTRD                                  8AC32820
00A4 0  70B3                  MDX      NOTRD                                  8AC32830
00A5 0  70B2                  MDX      NOTRD                                  8AC32840
00A6 0  70B1                  MDX      NOTRD                                  8AC32850
00A7 0  70B0                  MDX      NOTRD                                  8AC32860
00A8 0  70AF                  MDX      NOTRD                                  8AC32870
00A9 0  70AE                  MDX      NOTRD                                  8AC32880
00AA 0  70AD                  MDX      NOTRD                                  8AC32890
00AB 0  70AC                  MDX      NOTRD                                  8AC32900
00AC 0  70AB                  MDX      NOTRD                                  8AC32910
00AD 0  70AA                  MDX      NOTRD                                  8AC32920
00AE 0  70A9                  MDX      NOTRD                                  8AC32930
00AF 0  70A8                  MDX      NOTRD                                  8AC32940
00B0 0  70A7                  MDX      NOTRD                                  8AC32950
00B1 0  70A6                  MDX      NOTRD                                  8AC32960
00B2 0  70A5                  MDX      NOTRD                                  8AC32970
00B3 0  70A4                  MDX      NOTRD                                  8AC32980
00B4 0  70A3                  MDX      NOTRD                                  8AC32990
00B5 0  70A2                  MDX      NOTRD                                  8AC33000
00B6 0  70A1                  MDX      NOTRD                                  8AC33010
00B7 0  70A0                  MDX      NOTRD                                  8AC33020
00B8 0  709F                  MDX      NOTRD                                  8AC33030
00B9 0  709E                  MDX      NOTRD                                  8AC33040
00BA 0  709D                  MDX      NOTRD                                  8AC33050
00BB 0  709C                  MDX      NOTRD                                  8AC33060
00BC 0  7098                  MDX      NOTRD                                  8AC33070
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                        *                                                       8AC33080
                        *                                                       8AC33090
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC33100
                        *            CORRECTIONS FOR THE FOLLOWING 27     *     8AC33110
                        *            WORDS MUST BE MADE IN THE CARD       *     8AC33120
                        *            NUMBERED 4 OF THIS AUX PROGRAMS      *     8AC33130
                        *            7 CARD OBJECT DECK.                  *     8AC33140
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC33150
                        *                                                       8AC33160
                        *                                                       8AC33170
008D 0  7094                MDX     NOTRD                                       8AC33180
008E 0  7099                MDX     NOTRD                                       8AC33190
008F 0  7098                MDX     NOTRD                                       8AC33200
00C0 0  7097                MDX     NOTRD                                       8AC33210
00C1 0  7096                MDX     NOTRD                                       8AC33220
00C2 0  7095                MDX     NOTRD                                       8AC33230
00C3 0  7094                MDX     NOTRD                                       8AC33240
00C4 0  7093                MDX     NOTRD                                       8AC33250
00C5 0  7038                MDX     /00FE                                       8AC33260
00C6 0  7037                MDX     /00FE                                       8AC33270
00C7 0  7036                MDX     /00FE                                       8AC33280
00C8 0  7035                MDX     /00FE                                       8AC33290
00C9 0  7034                MDX     /00FE                                       8AC33300
00CA 0  7033                MDX     /00FE                                       8AC33310
00CB 0  7032                MDX     /00FE                                       8AC33320
00CC 0  7031                MDX     /00FE                                       8AC33330
00CD 0  7030                MDX     /00FE                                       8AC33340
00CE 0  702F                MDX     /00FE                                       8AC33350
00CF 0  702E                MDX     /00FE                                       8AC33360
00D0 0  702D                MDX     /00FE                                       8AC33370
00D1 0  702C                MDX     /00FE                                       8AC33380
00D2 0  7028                MDX     /00FE                                       8AC33390
00D3 0  702A                MDX     /00FE                                       8AC33400
00D4 0  7029                MDX     /00FE                                       8AC33410
00D5 0  7028                MDX     /00FE                                       8AC33420
00D6 0  7027                MDX     /00FE                                       8AC33430
00D7 0  7026                MDX     /00FE                                       8AC33440
                        *                                                       8AC33450
                        *                                                       8AC33460
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC33470
                        *            CORRECTIONS FOR THE FOLLOWING 38     *     8AC33480
                        *            WORDS MUST BE MADE IN THE CARD       *     8AC33490
                        *            NUMBERED 5 OF THIS AUX PROGRAMS      *     8AC33500
                        *            7 CARD OBJECT DECK.                  *     8AC33510
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC33520
                        *                                                       8AC33530
                        *                                                       8AC33540
00D8 0  7025                MDX     /00FE                                       8AC33550
00D9 0  7024                MDX     /00FE                                       8AC33560
00DA 0  7023                MDX     /00FE                                       8AC33570
00DB 0  7022                MDX     /00FE                                       8AC33580
00DC 0  7021                MDX     /00FE                                       8AC33590
00DD 0  7020                MDX     /00FE                                       8AC33600
00DE 0  701F                MDX     /00FE                                       8AC33610
00DF 0  701E                MDX     /00FE                                       8AC33620
00E0 0  701D                MDX     /00FE                                       8AC33630
00E1 0  701C                MDX     /00FE                                       8AC33640
00E2 0  701B                MDX     /00FE                                       8AC33650
00E3 0  701A                MDX     /00FE                                       8AC33660
00E4 0  7019                MDX     /00FE                                       8AC33670
00E5 0  7018                MDX     /00FE                                       8AC33680
00E6 0  7017                MDX     /00FE                                       8AC33690
00E7 0  7016                MDX     /00FE                                       8AC33700
00E8 0  7015                MDX     /00FE                                       8AC33710
00E9 0  7014                MDX     /00FE                                       8AC33720
00EA 0  7013                MDX     /00FE                                       8AC33730
00EB 0  7012                MDX     /00FE                                       8AC33740
00EC 0  7011                MDX     /00FE                                       8AC33750
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00ED 0  7010                MDX     /00FE                                       8AC33760
00EE 0  700F                MDX     /00FE                                       8AC33770
00EF 0  700E                MDX     /00FE                                       8AC33780
00F0 0  700D                MDX     /00FE                                       8AC33790
00F1 0  700C                MDX     /00FE                                       8AC33800
00F2 0  7008                MDX     /00FE                                       8AC33810
00F3 0  700A                MDX     /00FE                                       8AC33820
00F4 0  7009                MDX     /00FE                                       8AC33830
00F5 0  7008                MDX     /00FE                                       8AC33840
00F6 0  7007                MDX     /00FE                                       8AC33850
00F7 0  7006                MDX     /00FE                                       8AC33860
00F8 0  7005                MDX     /00FE                                       8AC33870
00F9 0  7004                MDX     /00FE                                       8AC33880
00FA 0  7003                MDX     /00FE                                       8AC33890
00FB 0  7002                MDX     /00FE                                       8AC33900
00FC 0  7001                MDX     /00FE                                       8AC33910
00FD 0  7000                MDX     /00FE                                       8AC33920
                        ********************************************************* 8AC33930
                        *                                                       8AC33940
000D                    QQQQ  EQU   /D         GO TO LOADER AT /D               8AC33950
70D7                    NNNN  EQU   /70D7      FOR CARD LOADER AT /35           8AC33960
0813                    WWWW  EQU   /0813      SET IN LOADER AT /04             8AC33970
7035                    TTTT  EQU   /7000+RETUR-/4-1   THIS IS EQUAL TO         8AC33980
                        *                      THE BRANCH FROM THE LOADER       8AC33990
                        *                      TO RETUR IN THIS PROGRAM.        8AC34000
                        ********************************************************* 8AC34010
00FE    00FD                END     *-1        END CARD NEVER USED              8AC34020
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1442

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	1000	0053,0055,0057,0065,0067,0069,006B,006D
CEGO	006E	004C
CEOFF	0056	0038,005B
CEON	0054	003A,0045
CESW	0062	0041
DSW52	0052	0036,003D
FEED	006C	
NNNN	70D7	0052
NOTRD	0058	0043,004E,0061,006A,006C,006E,006F,0070,0071,0072, 0073,0074,0075,0076,0077,0078,0079,007A,007B,007C, 007D,007E,007F,0080,0081,0082,0083,0084,0085,0086, 0087,0088,0089,008A,008B,008C,008D,008E,008F,0090, 0091,0092,0093,0094,0095,0096,0097,0098,0099,009A, 009B,009C,009D,009E,009F,00A0,00A1,00A2,00A3,00A4, 00A5,00A6,00A7,00A8,00A9,00AA,00AB,00AC,00AD,00AE, 00AF,00B0,00B1,00B2,00B3,00B4,00B5,00B6,00B7,00B8, 00B9,00BA,00BB,00BC,00BD,00BE,00BF,00C0,00C1,00C2, 00C3,00C4
QQQQ	000D	0060
RED12	0066	
RED88	0064	
RETUR	003A	00FE
SAVE2	005C	0033,0046
SAVE3	005E	003C
SENBI	0050	003F,0040,0042
STACK	006A	
STATU	0063	003E
TERM	004E	0048
TTTT	7035	0056
WRITE	0068	
WWWW	0813	0058

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1443

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                        ABS                                              8AC34030
028C                    ORG     /36                                      8AC34040
                *                                                        8AC34050
                ********************************************************* 8AC34060
3000            AREA  EQU     /3000       1ST 1443 AREA CODE             8AC34070
                *       IF THIS PROG IS TO BE USED FOR A MACH            8AC34080
                * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH           8AC34090
                * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST        8AC34100
                * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A          8AC34110
                * MODIFIED AUX 8-A OBJECT DECK. SEE AUX CE PROG           8AC34120
                * GENERATOR WRITE-UP FOR PROCEDURE.                       8AC34130
                ********************************************************* 8AC34140
                *                                                        8AC34150
                *                                                        8AC34160
                *             1443 SKELETON PROGRAM                      8AC34170
                *             (SEE AUX CE PROG GENERATOR                 8AC34180
                *             * WRITE-UP FOR USE PROCEDURE)              8AC34190
                *             ****************************               8AC34200
                * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE             8AC34210
                *                                                        8AC34220
                *                                                        8AC34230
                *                                                        8AC34240
                *                                                        8AC34250
                *             PURPOSE                                    8AC34260
                *                THE PURPOSE OF THIS PROGRAM IS          8AC34270
                *                TO PROVIDE A SKELETON PROGRAM           8AC34280
                *                UPON WHICH THE CE CAN WRITE AN          8AC34290
                *                AUX STORAGE PROGRAM.                    8AC34300
                *                                                        8AC34310
                *                                                        8AC34320
                *             GENERAL INSTRUCTIONS                       8AC34330
                *             CE SWITCH SETTINGS                         8AC34340
                *                00001111  CE SERVICE STOP               8AC34350
                *                11111111  TERMINATE PROGRAM             8AC34360
                *                ALL OTHER COMBINATIONS ARE STORED       8AC34370
                *                * AT THE LOCATION  CESW  FOR            8AC34380
                *                * POSSIBLE USE BY THE CE TO             8AC34390
                *                * CONTROL HIS PROGRAM                   8AC34400
                *                                                        8AC34410
                *                                                        8AC34420
                ********************************************************* 8AC34430
                *                                                        8AC34440
                *                                                        8AC34450
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC34460
                *             CORRECTIONS FOR THE FOLLOWING 27    *      8AC34470
                *             WORDS MUST BE MADE IN THE CARD      *      8AC34480
                *             NUMBERED X OF THIS AUX PROGRAMS     *      8AC34490
                *             7 CARD OBJECT DECK.                 *      8AC34500
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC34510
                *                                                        8AC34520
                *                                                        8AC34530
                *                                                        8AC34540
                *             AUX PROG ENTRY POINTS                      8AC34550
                *             *********************                      8AC34560
                *                                                        8AC34570
                *             1ST PASS ENTRY                             8AC34580
                *             *************                              8AC34590
                *                                                        8AC34600
0036 0  C01B        LD      DSW52       RESTORE LOC NICE                8AC34610
0037 0  D0FD        STO     /35         * IN AUX LOADER                 8AC34620
                *                                                        8AC34630
0038 0  C01D        LD      CEOFF       PLACE BRANCH-                   8AC34640
0039 0  D0CA        STO     /04         * TO RETUR LABEL                8AC34650
                *                                                        8AC34660
                *             ALL BUT 1ST PASS ENTRY POINT               8AC34670
                *             ***************************            8AC34680
003A 0  0819    RETUR XIO     CEON      SET DEVICE IN CE MODE           8AC34690
003B 0  6A21        STX   2 SAVE2+1     SAVE INDEX REGISTER 2           8AC34700
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003C 0  6822            STX   3 SAVE3+1    SAVE INDEX REGISTER 3          8AC34710
003D 0  0814            XIO     DSW52      SENSE DEVICE STATUS            8AC34720
003E 0  0024            STO     STATU      SAVE DEVICE STATUS             8AC34730
003F 0  0810            XIO     SENBI      SENSE CE PROG SW TO ACCUM      8AC34740
0040 0  E00F            AND     SENBI      BLOCK OUT PROG SEL SW          8AC34750
0041 0  0020            STO     CESW       SAVE CE PROG SW SETTINGS       8AC34760
0042 0  F00D            EOR     SENBI                                     8AC34770
0043 00 4C180058        BSC  L  NOTRD,+-   BR TERMINATE PROGRAM           8AC34780
0045 0  F00E            EOR     CEON                                      8AC34790
0046 00 4C18005C        BSC  L  SAVE2,+-    BR SERVICE STOP               8AC34800
0048 00 CC00004E        LDD  L  TERM                                      8AC34810
004A 00 DC0000FE        STD  L  /00FE      SET TERMINATOR BR AT END       8AC34820
                      *                    * OF AUX CORE AS A SAFETY      8AC34830
                      *                    * PRECAUTION                   8AC34840
                      *                                                   8AC34850
004C 00 4C000068        BSC  L  CEGO       BR TO DO IT YOURSELF PROG      8AC34860
004E 00 4C000058  TERM  BSC  L  NOTRD      TERMINATOR BRANCH              8AC34870
                      ************************************************** 8AC34880
                      *                                                  8AC34890
                      *           CONSTANTS AND/OR IOCC WORDS            8AC34900
0050    0000            BSS  E  0                                         8AC34910
0050 0  00FF      SENBI DC      /00FF      TERMINATOR CONSTANT            8AC34920
                      *                                                  8AC34930
                      *                                                  8AC34940
                      *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC34950
                      *           CORRECTIONS FOR THE FOLLOWING 27   *   8AC34960
                      *           WORDS MUST BE MADE IN THE CARD     *   8AC34970
                      *           NUMBERED 0 OF THIS AUX PROGRAMS    *   8AC34980
                      *           7 CARD OBJECT DECK.                *   8AC34990
                      *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC35000
                      *                                                  8AC35010
                      *                                                  8AC35020
0051 0  0760            DC      /0760      SENSE CE SWITCHES              8AC35030
0052 0  70D7      DSW52 DC      NNNN                                      8AC35040
0053 0  3701            DC      /0701+AREA RESET DEVICE STATUS IOCC       8AC35050
0054 0  00F0      CEON  DC      /00F0      CE SERVICE STOP CONST          8AC35060
0055 0  3001            DC      /0001+AREA CE ON WORD                     8AC35070
0056 0  7035      CEOFF DC      TTTT                                      8AC35080
0057 0  3000            DC      /0000+AREA CE OFF WORD                    8AC35090
                      ********************************************       8AC35100
                      *                                                  8AC35110
                      *           EXIT POINTS TO AUX LOADER              8AC35120
                      *           *************************              8AC35130
                      *                                                  8AC35140
                      *           TERMINATE EXIT POINT                   8AC35150
0058 00 65000813  NOTRD LDX  L1 WWWW                                     8AC35160
005A 0  69A9            STX   1 /04                                       8AC35170
005B 0  08FA            XIO     CEOFF      REMOVE DEVICE FROM CE MODE     8AC35180
                      *                                                  8AC35190
                      *           NORMAL EXIT POINT                      8AC35200
005C 00 66000000  SAVE2 LDX  L2 0                                        8AC35210
005E 00 67000000  SAVE3 LDX  L3 0                                        8AC35220
                      *                                                  8AC35230
0060 0  70AC            MDX     QQQQ                                      8AC35240
                      ********************************************       8AC35250
                      ************************************************** 8AC35260
                      ************************************************** 8AC35270
                      *                                                  8AC35280
                      *           THE FOLLOWING CONSTANTS AND IOCC       8AC35290
                      *           WORDS HAS BEEN PLACED HERE TO AID      8AC35300
                      *           THE CE IN HIS PROGRAMMING EFFORT.      8AC35310
                      *                                                  8AC35320
0061 0  70F6            MDX     NOTRD      THIS LOC IS NOT USED           8AC35330
0062    0000            BSS  E  0                                         8AC35340
0062 0  0000      CESW  DC      0          CE PROGRAM SW SETTING          8AC35350
0063 0  0000      STATU DC      0          DEVICE STATUS WORD             8AC35360
                      *                                                  8AC35370
0064 0  0085      WRITE DC      /85        72 WD TABLE LOCATED AT         8AC35380
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                      *                    * 0086 THRU 00FD               8AC35390
                      *                    * A WORD COUNT OF 72 IS        8AC35400
                      *                    * PLACED AT LOC 0085           8AC35410
0065 0  3500            DC      /0500+ARFA IOCC INIT. WRITE WORD          8AC35420
                      *                                                  8AC35430
0066 0  0100      CTRL  DC      /0100      PLACE CARRIAGE CTRL SKIP       8AC35440
                      *                    * HERE. PRESENT CONTENT        8AC35450
                      *                    * IS A SKIP TO CHAN 1.         8AC35460
0067 0  3400            DC      /0400+AREA IOCC CONTROL WORD              8AC35470
                      ************************************************** 8AC35480
                      *                                                  8AC35490
                      *                                                  8AC35500
                      *                                                  8AC35510
                      *           THIS IS THE STARTING POINT OF YOUR     8AC35520
                      *           PROGRAM.                               8AC35530
                      *           FROM HERE ON YOU ARE ON YOUR OWN.      8AC35540
                      *           GOOD LUCK.                             8AC35550
                      *                                                  8AC35560
                      *                                                  8AC35570
0068 0  70EF      CEGO  MDX     NOTRD      1ST LOC OF YOUR PROGRAM        8AC35580
                      *           BRANCH TO LOCATION  SAVE2   WHEN       8AC35590
                      *           EXITING FROM YOUR PROGRAM.             8AC35600
0069 0  70EE            MDX     NOTRD                                     8AC35610
006A 0  70ED            MDX     NOTRD                                     8AC35620
006B 0  70EC            MDX     NOTRD                                     8AC35630
                      *                                                  8AC35640
                      *                                                  8AC35650
                      *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC35660
                      *           CORRECTIONS FOR THE FOLLOWING 27   *   8AC35670
                      *           WORDS MUST BE MADE IN THE CARD     *   8AC35680
                      *           NUMBERED 1 OF THIS AUX PROGRAMS    *   8AC35690
                      *           7 CARD OBJECT DECK.                *   8AC35700
                      *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC35710
                      *                                                  8AC35720
                      *                                                  8AC35730
006C 0  70EB            MDX     NOTRD                                     8AC35740
006D 0  70EA            MDX     NOTRD                                     8AC35750
006E 0  70E9            MDX     NOTRD                                     8AC35760
006F 0  70E8            MDX     NOTRD                                     8AC35770
0070 0  70E7            MDX     NOTRD                                     8AC35780
0071 0  70E6            MDX     NOTRD                                     8AC35790
0072 0  70E5            MDX     NOTRD                                     8AC35800
0073 0  70E4            MDX     NOTRD                                     8AC35810
0074 0  70E3            MDX     NOTRD                                     8AC35820
0075 0  70E2            MDX     NOTRD                                     8AC35830
0076 0  70E1            MDX     NOTRD                                     8AC35840
0077 0  70E0            MDX     NOTRD                                     8AC35850
0078 0  70DF            MDX     NOTRD                                     8AC35860
0079 0  70DE            MDX     NOTRD                                     8AC35870
007A 0  70DD            MDX     NOTRD                                     8AC35880
007B 0  70DC            MDX     NOTRD                                     8AC35890
007C 0  70DB            MDX     NOTRD                                     8AC35900
007D 0  70DA            MDX     NOTRD                                     8AC35910
007E 0  70D9            MDX     NOTRD                                     8AC35920
007F 0  70D8            MDX     NOTRD                                     8AC35930
0080 0  70D7            MDX     NOTRD                                     8AC35940
0081 0  70D6            MDX     NOTRD                                     8AC35950
0082 0  70D5            MDX     NOTRD                                     8AC35960
0083 0  70D4            MDX     NOTRD                                     8AC35970
0084 0  70D3            MDX     NOTRD                                     8AC35980
0085 0  70D2            MDX     NOTRD                                     8AC35990
0086 0  70D1            MDX     NOTRD                                     8AC36000
                      *                                                  8AC36010
                      *                                                  8AC36020
                      *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC36030
                      *           CORRECTIONS FOR THE FOLLOWING 27   *   8AC36040
                      *           WORDS MUST BE MADE IN THE CARD     *   8AC36050
                      *           NUMBERED 2 OF THIS AUX PROGRAMS    *   8AC36060
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AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1443

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                        *            7 CARD OBJECT DECK.            *  8AC36070
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC36080
                        *                                           *  8AC36090
                        *                                           *  8AC36100
0087 0  70D0                 MDX     NOTRD                             8AC36110
0088 0  70CF                 MDX     NOTRD                             8AC36120
0089 0  70CE                 MDX     NOTRD                             8AC36130
008A 0  70CD                 MDX     NOTRD                             8AC36140
008B 0  70CC                 MDX     NOTRD                             8AC36150
008C 0  70CB                 MDX     NOTRD                             8AC36160
008D 0  70CA                 MDX     NOTRD                             8AC36170
008E 0  70C9                 MDX     NOTRD                             8AC36180
008F 0  70C8                 MDX     NOTRD                             8AC36190
0090 0  70C7                 MDX     NOTRD                             8AC36200
0091 0  70C6                 MDX     NOTRD                             8AC36210
0092 0  70C5                 MDX     NOTRD                             8AC36220
0093 0  70C4                 MDX     NOTRD                             8AC36230
0094 0  70C3                 MDX     NOTRD                             8AC36240
0095 0  70C2                 MDX     NOTRD                             8AC36250
0096 0  70C1                 MDX     NOTRD                             8AC36260
0097 0  70C0                 MDX     NOTRD                             8AC36270
0098 0  70BF                 MDX     NOTRD                             8AC36280
0099 0  70BE                 MDX     NOTRD                             8AC36290
009A 0  70BD                 MDX     NOTRD                             8AC36300
009B 0  70BC                 MDX     NOTRD                             8AC36310
009C 0  70BB                 MDX     NOTRD                             8AC36320
009D 0  70BA                 MDX     NOTRD                             8AC36330
009E 0  70B9                 MDX     NOTRD                             8AC36340
009F 0  70B8                 MDX     NOTRD                             8AC36350
00A0 0  70B7                 MDX     NOTRD                             8AC36360
00A1 0  70B6                 MDX     NOTRD                             8AC36370
                        *                                           *  8AC36380
                        *                                           *  8AC36390
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC36400
                        *            CORPECTIONS FOR THE FOLLOWING 27   *  8AC36410
                        *            WORDS MUST BE MADE IN THE CARD     *  8AC36420
                        *            NUMBERED 3 OF THIS AUX PROGRAMS    *  8AC36430
                        *            7 CARD OBJECT DECK.                *  8AC36440
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC36450
                        *                                           *  8AC36460
                        *                                           *  8AC36470
00A2 0  70B5                 MDX     NOTRD                             8AC36480
00A3 0  70B4                 MDX     NOTRD                             8AC36490
00A4 0  70B3                 MDX     NOTRD                             8AC36500
00A5 0  70B2                 MDX     NOTRD                             8AC36510
00A6 0  70B1                 MDX     NOTRD                             8AC36520
00A7 0  70B0                 MDX     NOTRD                             8AC36530
00A8 0  70AF                 MDX     NOTRD                             8AC36540
00A9 0  70AE                 MDX     NOTRD                             8AC36550
00AA 0  70AD                 MDX     NOTRD                             8AC36560
00AB 0  70AC                 MDX     NOTRD                             8AC36570
00AC 0  70AB                 MDX     NOTRD                             8AC36580
00AD 0  70AA                 MDX     NOTRD                             8AC36590
00AE 0  70A9                 MDX     NOTRD                             8AC36600
00AF 0  70A8                 MDX     NOTRD                             8AC36610
00B0 0  70A7                 MDX     NOTRD                             8AC36620
00B1 0  70A6                 MDX     NOTRD                             8AC36630
00B2 0  70A5                 MDX     NOTRD                             8AC36640
00B3 0  70A4                 MDX     NOTRD                             8AC36650
00B4 0  70A3                 MDX     NOTRD                             8AC36660
00B5 0  0048            B5   DC      72          WD COUNT FOR 1443 TABLE 8AC36670
00B6 0  70A1                 MDX     NOTRD                             8AC36680
00B7 0  70A0                 MDX     NOTRD                             8AC36690
00B8 0  709F                 MDX     NOTRD                             8AC36700
00B9 0  709E                 MDX     NOTRD                             8AC36710
00BA 0  709D                 MDX     NOTRD                             8AC36720
00BB 0  709C                 MDX     NOTRD                             8AC36730
00BC 0  7098                 MDX     NOTRD                             8AC36740
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AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1443

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                        *                                           *  8AC36750
                        *                                           *  8AC36760
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC36770
                        *            CORRECTIONS FOR THE FOLLOWING 27   *  8AC36780
                        *            WORDS MUST BE MADE IN THE CARD     *  8AC36790
                        *            NUMBERED 4 OF THIS AUX PROGRAMS    *  8AC36800
                        *            7 CARD OBJECT DECK.                *  8AC36810
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC36820
                        *                                           *  8AC36830
                        *                                           *  8AC36840
008D 0  709A                 MDX     NOTRD                             8AC36850
008E 0  7099                 MDX     NOTRD                             8AC36860
008F 0  7098                 MDX     NOTRD                             8AC36870
00C0 0  703D                 MDX     /00FE                             8AC36880
00C1 0  703C                 MDX     /00FE                             8AC36890
00C2 0  703B                 MDX     /00FE                             8AC36900
00C3 0  703A                 MDX     /00FE                             8AC36910
00C4 0  7039                 MDX     /00FE                             8AC36920
00C5 0  7038                 MDX     /00FE                             8AC36930
00C6 0  7037                 MDX     /00FE                             8AC36940
00C7 0  7036                 MDX     /00FE                             8AC36950
00C8 0  7035                 MDX     /00FE                             8AC36960
00C9 0  7034                 MDX     /00FE                             8AC36970
00CA 0  7033                 MDX     /00FE                             8AC36980
00CB 0  7032                 MDX     /00FE                             8AC36990
00CC 0  7031                 MDX     /00FE                             8AC37000
00CD 0  7030                 MDX     /00FE                             8AC37010
00CE 0  702F                 MDX     /00FE                             8AC37020
00CF 0  702E                 MDX     /00FE                             8AC37030
00D0 0  702D                 MDX     /00FE                             8AC37040
00D1 0  702C                 MDX     /00FE                             8AC37050
00D2 0  702B                 MDX     /00FE                             8AC37060
00D3 0  702A                 MDX     /00FE                             8AC37070
00D4 0  7029                 MDX     /00FE                             8AC37080
00D5 0  7028                 MDX     /00FE                             8AC37090
00D6 0  7027                 MDX     /00FE                             8AC37100
00D7 0  7026                 MDX     /00FE                             8AC37110
                        *                                           *  8AC37120
                        *                                           *  8AC37130
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC37140
                        *            CORRECTIONS FOR THE FOLLOWING 38   *  8AC37150
                        *            WORDS MUST BE MADE IN THE CARD     *  8AC37160
                        *            NUMBERED 5 OF THIS AUX PROGRAMS    *  8AC37170
                        *            7 CARD OBJECT DECK.                *  8AC37180
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC37190
                        *                                           *  8AC37200
                        *                                           *  8AC37210
00D8 0  7025                 MDX     /00FE                             8AC37220
00D9 0  7024                 MDX     /00FE                             8AC37230
00DA 0  7023                 MDX     /00FE                             8AC37240
00DB 0  7022                 MDX     /00FE                             8AC37250
00DC 0  7021                 MDX     /00FE                             8AC37260
00DD 0  7020                 MDX     /00FE                             8AC37270
00DE 0  701F                 MDX     /00FE                             8AC37280
00DF 0  701E                 MDX     /00FE                             8AC37290
00E0 0  701D                 MDX     /00FE                             8AC37300
00E1 0  701C                 MDX     /00FE                             8AC37310
00E2 0  701B                 MDX     /00FE                             8AC37320
00E3 0  701A                 MDX     /00FE                             8AC37330
00E4 0  7019                 MDX     /00FE                             8AC37340
00E5 0  7018                 MDX     /00FE                             8AC37350
00E6 0  7017                 MDX     /00FE                             8AC37360
00E7 0  7016                 MDX     /00FE                             8AC37370
00E8 0  7015                 MDX     /00FE                             8AC37380
00E9 0  7014                 MDX     /00FE                             8AC37390
00EA 0  7013                 MDX     /00FE                             8AC37400
00EB 0  7012                 MDX     /00FE                             8AC37410
00EC 0  7011                 MDX     /00FE                             8AC37420
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AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1443

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00ED 0  7010            MDX     /00FE                                   8AC37430
00EE 0  700F            MDX     /00FE                                   8AC37440
00EF 0  700E            MDX     /00FE                                   8AC37450
00F0 0  700D            MDX     /00FE                                   8AC37460
00F1 0  700C            MDX     /00FE                                   8AC37470
00F2 0  7008            MDX     /00FE                                   8AC37480
00F3 0  700A            MDX     /00FE                                   8AC37490
00F4 0  7009            MDX     /00FE                                   8AC37500
00F5 0  7008            MDX     /00FE                                   8AC37510
00F6 0  7007            MDX     /00FE                                   8AC37520
00F7 0  7006            MDX     /00FE                                   8AC37530
00F8 0  7005            MDX     /00FE                                   8AC37540
00F9 0  7004            MDX     /00FE                                   8AC37550
00FA 0  7003            MDX     /00FE                                   8AC37560
00FB 0  7002            MDX     /00FE                                   8AC37570
00FC 0  7001            MDX     /00FE                                   8AC37580
00FD 0  7000            MDX     /00FE                                   8AC37590
                  ********************************************************8AC37600
                  *                                                       8AC37610
000D              QQQQ  EQU     /D        GO TO LOADER AT /D            8AC37620
7007              NNNN  EQU     /7007     FOR CARD LOADER AT /35        8AC37630
0813              WWWW  EQU     /0813     SET IN LOADER AT /04          8AC37640
7035              TTTT  EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO    8AC37650
                  *                       THE BRANCH FROM THE LOADER    8AC37660
                  *                       TO RETUR IN THIS PROGRAM.     8AC37670
                  ********************************************************8AC37680
00FE    00FD            END     *-1       END CARD NEVER USED           8AC37690
```


AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1443

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	3000	0053,0055,0057,0065,0067
B5	0085	
CEGO	0068	004C
CEOFF	0056	0038,005B
CEON	0054	003A,0045
CESW	0062	0041
CTRL	0066	
DSW52	0052	0036,003D
NNNN	7007	0052
NOTRD	0058	0043,004E,0061,0068,0069,006A,006B,006C,006D,006E,006F,0070,0071,0072,0073,0074,0075,0076,0077,0078,0079,007A,007B,007C,007D,007E,007F,0080,0081,0082,0083,0084,0085,0086,0087,0088,0089,008A,008B,008C,008D,008E,008F,0090,0091,0092,0093,0094,0095,0096,0097,0098,0099,009A,009B,009C,009D,009E,009F,00A0,00A1,00A2,00A3,00A4,00A5,00A6,00A7,00A8,00A9,00AA,00AB,00AC,00AD,00AE,00AF,00B0,00B1,00B2,00B3,00B4,00B6,00B7,00B8,00B9,00BA,00BB,00BC,00BD,00BE,00BF
QQQQ	000D	0060
RETUR	003A	00FE
SAVE2	005C	003B,0046
SAVE3	005E	003C
SENBI	0050	003F,0040,0042
STATU	0063	003E
TERM	004E	0048
TTTT	7035	0056
WRITE	0064	
WWWW	0813	0058

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                        ABS                                              8AC00000
028C                    ORG     3300                                     8AC00010
                *                                                        8AC00020
                ********************************************************8AC00030
0CE4 0  1000    AREA  DC      /1000       1ST 1442 AREA CODE             8AC00040
                *       IF THIS PROG IS TO BE USED FOR A MACHINE         8AC00050
                * WITH A DIFF AREA CODE THE CONTENTS AT THE LOCATN       8AC00060
                * REFERRED TO AS AREA MUST BE CHANGED BY A               8AC00070
                * STANDARD HEX CARD OVERLAY INSERTED PRIOR TO THIS       8AC00080
                * PROGRAMS 12-4 OBJECT DECKS END CARD                    8AC00090
                ********************************************************8AC00100
                *                                                        8AC00110
                *                                                        8AC00120
                *       7 CARD EDIT AND PUNCH                            8AC00130
                *       *********************                            8AC00140
                *                                                        8AC00150
                * THIS PROG IS OPERATED IN MAIN CORE AND REQUIRES        8AC00160
                * * THE ENTIRE 1800 SYSTEM                               8AC00170
                *                                                        8AC00180
                *                                                        8AC00190
                *                                                        8AC00200
                * PURPOSE                                                8AC00210
                *    THIS PROGRAM ALLOWS THE CE TO MAKE CHANGES TO       8AC00220
                * AN EXISTING AUX 8-8 CARD DECK BY MEANS OF CARD         8AC00230
                * OVERLAYS, AND OBTAIN A NEW AUX 8-8 DECK (7 CARDS)      8AC00240
                *                                                        8AC00250
                *                                                        8AC00260
                * OPERATING INSTRUCTIONS TO CONVERT AN EXISTING          8AC00270
                * * AUX 8-8 PROG CARD DECK                               8AC00280
                *    MAKE SURE THAT AT LEAST ONE OF THE EIGHT            8AC00290
                *    * CONSOLE PROG AND SENSE SWITCHES ARE OFF           8AC00300
                *    LOAD CARD DECK ASSEMBLED IN ORDER SHOWN BELOW       8AC00310
                *                                                        8AC00320
                *     1. CYCLE STEAL LOADER                              8AC00330
                *     2. THIS PROGRAMS 12-4 OBJECT DECK                  8AC00340
                *     3. THE AUX 8-8 OBJECT DECK OF AUX PROG TO BE       8AC00350
                *        * MODIFIED (7 CARDS IN CORRECT ORDER)           8AC00360
                *     4. HEX OVERLAY CARDS (STANDARD FORMAT.             8AC00370
                *           THESE CARDS MUST ADHERE TO THE FOLLOWNG      8AC00380
                *        FORMAT                                          8AC00390
                *                                                        8AC00400
                *           COL.          FIELD DESCRIPTION              8AC00410
                *           1               12 PUNCH                     8AC00420
                *           2-5     ADDRESS WHERE 1ST CORRECTION GOES    8AC00430
                *           6               BLANK                        8AC00440
                *           7-10        FIRST CORRECTION WORD            8AC00450
                *           11              BLANK                        8AC00460
                *           12-15       SECOND CORRECTION WORD           8AC00470
                *           16              BLANK                        8AC00480
                *           ETC.    UP TO 15 CORRECTION WORDS CAN BE     8AC00490
                *                   PUNCHED IN ONE CARD. CORRECTION      8AC00500
                *                   WORDS ARE ENTERED AT SUCCESIVELY     8AC00510
                *                   HIGHER ADDRESSES FOLLOWING THE       8AC00520
                *                   1ST CORRECTION WORDS ADDRESS.        8AC00530
                *     5. BLANK CARDS                                     8AC00540
                *                                                        8AC00550
                *                                                        8AC00560
                *                                                        8AC00570
                * OPERATING INSTRUCTIONS TO CONVERT AN EXISTING          8AC00580
                * * AUX 8-8 LOADER CARD DECK                             8AC00590
                *    MAKE SURE THAT ALL OF THE EIGHT                     8AC00600
                *    * CONSOLE PROG AND SENSE SWITCHES ARE ON            8AC00610
                *       THE METHOD TO BE FOLLOWED IS IDENTICAL           8AC00620
                *    TO THE AUX 8-8 PROG CONVERTION PROCEDURE            8AC00630
                *    EXCEPT THAT AN ADDITIONAL PUNCH MUST BE             8AC00640
                *    PLACED IN COL 1 OF HEX OVERLAY CARDS AS             8AC00650
                *    * SHOWN BELOW                                       8AC00660
                *           X PUNCH     CORRECTION FOR 1ST               8AC00670
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                *                       * BOOTSTRAP CARD                 8AC00680
                *             0 PUNCH   CORRECTION FOR 2ND               8AC00690
                *                       * BOOTSTRAP CARD                 8AC00700
                *             1 PUNCH   CORRECTION FOR ACTUAL            8AC00710
                *                       * AUX LOADER CARDS               8AC00720
                *                                                        8AC00730
                * FOR ADDITIONAL INFORMATION ABOUT PROG. OPERATION       8AC00740
                * REFER TO THE PROGRAM DESCRIPTION WRITE-UP.             8AC00750
                *       ************************************             8AC00760
0CE5 0  FFFF    FFFF  DC      /FFFF                                      8AC00770
0CE6 0  0001    ADD   DC      /0001                                      8AC00780
0CE7 0  8000    NUMBE DC      /8000                                      8AC00790
0CE8 0  0080    EOR   DC      /0080                                      8AC00800
0CE9 0  0008    TWELV DC      8           TERMINATOR FOR CARD PUNCH      8AC00810
0CEA 0  0000    X38   DC      0                                          8AC00820
0CEB 0  0000    X39   DC      0                                          8AC00830
0CEC 0  0000    PUN   DC      0           LOC OF DATA TO BE PUNCHED      8AC00840
                *     DC      0           * PLACED HERE                  8AC00850
0CEE    0000          BSS   E 0                                          8AC00860
0CEE 0  0000    SENBI DC      0                                          8AC00870
0CEF 0  0760          DC      /0760       SENSE SENSE SWITCHES           8AC00880
0CF0 0  0336    PUNCH DC      /0336       ALL CARDS PUNCHED FROM         8AC00890
                *                         * THIS ADDR                    8AC00900
0CF1 0  0501          DC      /0501                                      8AC00910
0CF2 0  1802    CEOFF DC      /1802                                      8AC00920
                ********************************************           8AC00930
0CF3 00 C4000D85 MOQ  LD    L BITS                                       8AC00940
0CF5 00 4C200D07      BSC   L AUXX,Z      BR AUX PROGRAM                 8AC00950
                *               PUNCH AUX 8-8 LOADER PROGRAM DECK        8AC00960
0CF7 00 4C000EC2      BSC   L BOOT                                       8AC00970
0CF9 0  0EEF    LO    DC      LOAD                                       8AC00980
0CFA 0  C0FE    BOO   LD      LO                                         8AC00990
0CFB 00 D4000EEE      STO   L ABQ+1                                      8AC01000
0CFD 00 65001000      LDX   L1 /1000                                     8AC01010
0CFF 00 6D0C0CE8      STX   L1 EOR                                       8AC01020
0D01 00 0C000E8E MOR  XIO   L DSWOQ       SENSE DEVICE STATUS            8AC01030
0D03 00 4C040D01      BSC   L MOR,E       BR READER NOT READY            8AC01040
0D05 00 4C000EC6      BSC   L LA                                         8AC01050
                ********************************************           8AC01060
                *                                                        8AC01070
                *                                                        8AC01080
                *       AUX PROGRAM PUNCH ROUTINE                        8AC01090
                *                                                        8AC01100
0D07 00 65000536 AUXX LDX   L1 /0536      SET LOCATION OF LOADED         8AC01110
0D09 0  69E2          STX     1 PUN       * AUX PROG IN PUN              8AC01120
                *                                                        8AC01130
0D0A 0  6126    MORE  LDX     1 38        SAVE LOCATIONS                 8AC01140
0D0B 0  C0E0          LD      PUN         * WHERE HASH                   8AC01150
0D0C 0  D002          STO     SAV+1       * AND ID NUMBER                8AC01160
0D0D 0  D005          STO     SAVE+1      * WILL BE STORED               8AC01170
0D0E 00 C5000000 SAV  LD    L1 0           *                              8AC01180
0D10 0  D0D9          STO     X38         *                              8AC01190
0D11 0  6127          LDX     1 39        *                              8AC01200
0D12 00 C5000000 SAVE LD    L1 0           *                              8AC01210
0D14 0  D0D6          STO     X39         *                              8AC01220
0D15 0  6125          LDX     1 37                                       8AC01230
0D16 0  C0D5          LD      PUN                                        8AC01240
0D17 0  D013          STO     NUM+1                                      8AC01250
0D18 0  D005          STO     CHECK+1                                    8AC01260
0D19 0  D00B          STO     HASH+1                                     8AC01270
0D1A 0  C0D7          LD      CEOFF       LOAD UNIQUE                    8AC01280
0D1B 0  1802          SRA     2           * CARD                         8AC01290
0D1C 0  D0D5          STO     CEOFF       * ID NUMBER                    8AC01300
0D1D 00 85000000 CHECK A    L1 0-                                        8AC01310
0D1F 0  71FF          MDX     1 -1                                       8AC01320
0D20 0  70FC          MDX     CHECK                                      8AC01330
0D21 0  F0C3          EOR     FFFF                                       8AC01340
0D22 0  80C3          A       ADD                                        8AC01350
```

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0023 0  6126              LDX   1 38                                  8AC01360
0024 00 05000000  HASH    STO   L1 0        PLACE HASH TOTAL          8AC01370
0026 0  6127              LDX   1 39                                  8AC01380
0027 0  C08F              LD      NUMBE                               8AC01390
0028 0  1801              SRA     1                                   8AC01400
0029 0  D08D              STO     NUMBE                               8AC01410
002A 00 05000000  NUM     STO   L1 0        PLACE CARD NUMBER         8AC01420
002C 0  F08B              EOR     EOR                                 8AC01430
002D 00 4C180D58          BSC   L  WAIT,+-  BR 7 CARDS PUNCHED        8AC01440
002F 0  6128              LDX   1 40        COUNTER                   8AC01450
0030 0  6200              LDX   2 0                                   8AC01460
0031 00 67000335          LDX   L3 /335     PUNCH TABLE ADDR AT /336  8AC01470
0033 0  C088              LD      PUN                                 8AC01480
0034 0  D003              STO     SPLA+1                              8AC01490
0035 0  10A0      NIG     SLT     32                                  8AC01500
0036 0  7301              MDX   3 1                                   8AC01510
0037 00 C6000000  SPLA    LD    L2 0        OBTAIN DATA FROM CARD READ 8AC01520
0039 0  18D8              RTE     24                                  8AC01530
003A 00 D7000000          STO   L3 0        STORE IN PUNCH TABLE      8AC01540
003C 0  7301              MDX   3 1                                   8AC01550
003D 0  1098              SLT     24                                  8AC01560
003E 00 D7000000          STO   L3 0        STORE IN PUNCH TABLE      8AC01570
0040 0  7201              MDX   2 1                                   8AC01580
0041 0  71FF              MDX   1 -1                                  8AC01590
0042 0  70F2              MDX     NIG                                 8AC01600
0043 00 C4000385          LD    L /385      PLACE PUNCH TERMINATOR    8AC01610
0045 0  E8A3              OR      TWELV       *                       8AC01620
0046 00 D4000385          STO   L /385      *                         8AC01630
0048 0  08A7              XIO     PUNCH     PUNCH CARD IN 8-8 FORMAT  8AC01640
0049 0  C0A2              LD      PUN       RESTORE LOCATIONS         8AC01650
004A 0  D004              STO     SAVA+1    * DESTROYED BY            8AC01660
004B 0  D007              STO     SAVEA+1   * HASH AND ID             8AC01670
004C 0  6126              LDX   1 38        * NUMBER                  8AC01680
004D 0  C09C              LD      X38       *                         8AC01690
004E 00 D5000000  SAVA    STO   L1 0        *                         8AC01700
0050 0  6127              LDX   1 39        *                         8AC01710
0051 0  C099              LD      X39       *                         8AC01720
0052 00 D5000000  SAVEA   STO   L1 0        *                         8AC01730
0054 00 741B0CEC          MDX   L  PUN,27   UPDATE OUTPUT AREA ADDR   8AC01740
0056 00 0C000E8E          XIO   L  DSWOQ    SENSE DEVICE STATUS       8AC01750
0058 00 4C040D56          BSC   L  *-4,E    BR READER NOT READY       8AC01760
005A 0  70AF      BLK     MDX     MORE                                8AC01770
                          ********************************************* 8AC01780
                          *           THE AUX 8-8 DECK HAS BEEN       * 8AC01790
                          *           * MODIFIED AND PUNCHED          * 8AC01800
005B 0  3000      WAIT    WAIT              JOB COMPLETE              8AC01810
005C 0  70FE              MDX     *-2                                 8AC01820
                          *********************************************** 8AC01830
005D 00 C4000E91  HEXA    LD    L D300                                8AC01840
005F 00 D400012A          STO   L UPPER                               8AC01850
                          *                                           8AC01860
                          * THIS  ROUTINE READS THE OBJECT CARDS       8AC01870
                          *                                           8AC01880
0061 0  0812      RD05    XIO     MSK       MASK                      8AC01890
0062 0  0813      RD20    XIO     STRD      START READER              8AC01900
0063 0  081A      RD25    XIO     ESW       CHECK DSW                 8AC01910
0064 00 4C040D63          BSC   L  RD25,E    STILL BYSY IF BR          8AC01920
0066 0  8018              CMP     MSK2                                8AC01930
0067 0  7004              MDX     RD40      ERROR B2 ON               8AC01940
0068 0  7001              MDX     RD30      READY MAY NOT BE  N       8AC01950
0069 0  7004              MDX     RD50      B4 ON, CARD IN            8AC01960
006A 0  8018      RD30    CMP     MSK3      CHECK IF B5 OR 6  N       8AC01970
006B 0  1000              NOP               YES                       8AC01980
006C 0  1000      RD40    NOP                                         8AC01990
006D 0  70F5              MDX     RD25      READY NOT ON              8AC02000
006E 0  0811      RD50    XIO     REDSW     RESET                     8AC02010
006F 00 C4000E17          LD    L CDIN                                8AC02020
0071 00 4C280DD2  RD55    BSC   L  HB05,+Z   BR HEX CARD               8AC02030
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0073 0  7014              MDX     SB05                                8AC02040
0074    0000              BSS   E 0                                   8AC02050
0074 0  FFFF      MSK     DC      /FFFF                               8AC02060
0075 0  0480              DC      /0480                               8AC02070
0076 0  0E17      STRD    DC      CDIN                                8AC02080
0077 0  0600              DC      /0600                               8AC02090
0078 0  0600      RDIX    DC      /0600                               8AC02100
0079 0  0601              DC      /0601                               8AC02110
007A 0  0500      RBOT1   DC      /0500                               8AC02120
007B 0  0601              DC      /0601                               8AC02130
007C 0  0550      RBOT2   DC      /0550                               8AC02140
007D 0  0601              DC      /0601                               8AC02150
007E 0  0000      ESW     DC      /0000                               8AC02160
007F 0  0700              DC      /0700                               8AC02170
0080 0  0000      REDSW   DC      /0000                               8AC02180
0081 0  0703              DC      /0703                               8AC02190
0082 0  0800      MSK2    DC      /0800                               8AC02200
0083 0  0100      MSK3    DC      /0100                               8AC02210
0084 0  00FF      FEED    DC      /00FF                               8AC02220
0085 0  0000      BITS    DC      0                                   8AC02230
0086 0  1802      CEOFX   DC      /1802                               8AC02240
0087 0  018C      CEOX    DC      /0180                               8AC02250
                          *                                           8AC02260
                          * THIS ROUTINE PACKS AND STORES BINARY DA A  8AC02270
                          *                                           8AC02280
0088 0  6188      SB05    LDX   1 -72                                 8AC02290
0089 0  6300              LDX   3 0                                   8AC02300
008A 0  62FD      SB06    LDX   2 -3                                  8AC02310
008B 00 C6000DA1  SB07    LD    L2 SL+3                               8AC02320
008D 0  D006              STO     SB10                                8AC02330
008E 00 C5000E60          LD    L1 CDIN+73                            8AC02340
0090 0  18D0              RTE     16                                  8AC02350
0091 00 C5000E5F          LD    L1 CDIN+72                            8AC02360
0093 0  1804              SRA     4                                   8AC02370
0094 0  1000      SB10    SLA     0                                   8AC02380
0095 00 D7000E17          STO   L3 CDIN                               8AC02390
0097 0  7301              MDX   3 1                                   8AC02400
0098 0  7101              MDX   1 1                                   8AC02410
0099 0  7201              MDX   2 1                                   8AC02420
009A 0  70F0              MDX     SB07      FINISHED                  8AC02430
009B 0  7101              MDX   1 1                                   8AC02440
009C 0  70ED              MDX     SB06                                8AC02450
009D 0  7003              MDX     LB05                                8AC02460
009E 0  1084      SL      SLT     4                                   8AC02470
009F 0  1088              SLT     8                                   8AC02480
00A0 0  108C              SLT     12                                  8AC02490
                          *                                           8AC02500
                          * THIS ROUTINE LOADS BINARY DATA INTO MEM RY 8AC02510
                          *                                           8AC02520
00A1 0  C077      LB05    LD      CDIN+2                              8AC02530
00A2 0  E017              AND     LB15                                8AC02540
00A3 0  D015              STO     PCAM                                8AC02550
00A4 00 4C180CF3          BSC   L  MOQ,+-     BR END CARD               8AC02560
00A6 00 66000E20          LDX   L2 BIDA                               8AC02570
00A8 0  6100      LB06    LDX   1 0                                   8AC02580
00A9 0  6A07              STX   2 LB10+1                              8AC02590
00AA 0  C06C              LD      CDIN                                8AC02600
00AB 00 8400012A          A     L  UPPER                              8AC02610
00AD 0  D069              STO     CDIN                                8AC02620
00AE 00 66800E17          LDX   I2 CDIN                               8AC02630
00B0 00 C5000000  LB10    LD    L1 0                                  8AC02640
00B2 0  D200              STO   2 0                                   8AC02650
00B3 0  7201              MDX   2 1                                   8AC02660
00B4 0  7101              MDX   1 1                                   8AC02670
00B5 00 74FF0DB9          MDX   L  PCAM,-1    SKIP WORD COUNT  ERO    8AC02680
00B7 0  70F8              MDX     LB10                                8AC02690
00B8 0  70A9              MDX     RD20                                8AC02700
00B9 0  0000      PCAM    DC      0           WORD COUNT              8AC02710
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0DBA 0  00FF        LB15  DC      /00FF                                  8AC02720
0DB8 00 65000500    BT1   LDX  L1 /0500                                  8AC02730
0DBD 00 6D00012A          STX  L1 UPPER                                  8AC02740
0DBF 00 4C000DDB          BSC  L  HES                                    8AC02750
0DC1 00 65000600    BT3   LDX  L1 /0600                                  8AC02760
0DC3 00 6D00012A          STX  L1 UPPER                                  8AC02770
0DC5 00 4C000DDB          BSC  L  HES                                    8AC02780
0DC7 00 65000500    BT2   LDX  L1 /0500                                  8AC02790
0DC9 00 6D00012A          STX  L1 UPPER                                  8AC02800
0DCB 00 4C000DDB          BSC  L  HES                                    8AC02810
                    *                                                    8AC02820
                    * THIS ROUTINE PUTS CONVERTED HEX DATA IN O          8AC02830
                    *      STORAGE                                       8AC02840
                    *                                                    8AC02850
0DCD 00 66000E18    LH05  LDX  L2 CDIN+1                                 8AC02860
0DCF 00 74FF0DB9          MDX  L  PCAM,-1                                8AC02870
0DD1 0  70D6              MDX     LB06                                   8AC02880
                    *                                                    8AC02890
                    *  THIS ROUTINE CONVERTS HEX TO BINARY               8AC02900
                    *                                                    8AC02910
                    *        TEST FOR TYPE OF OVERLAY CARDS              8AC02920
0DD2 0  1001        HB05  SLA     1                                      8AC02930
0DD3 00 4C280DBB          BSC  L  BT1,+Z     BR OVERLAY BOOT 1           8AC02940
0DD5 0  1001              SLA     1                                      8AC02950
0DD6 00 4C280DC7          BSC  L  BT2,+Z     BR OVERLAY BOOT 2           8AC02960
0DD8 0  1001              SLA     1                                      8AC02970
0DD9 00 4C280DC1          BSC  L  BT3,+Z     BR OVERLAY AUX LOADER       8AC02980
0DDB 0  61B0        HES   LDX  1 -80                                     8AC02990
0DDC 0  1810              SRA     16                                     8AC03000
0DDD 0  D0DB              STO     PCAM                                   8AC03010
0DDE 0  1810        HB06  SRA     16                                     8AC03020
0DDF 0  6204              LDX  2 4                                       8AC03030
0DE0 0  1004        HB10  SLA     4                                      8AC03040
0DE1 0  D013              STO     TEMP1                                  8AC03050
0DE2 00 C5000E68          LD   L1 CDIN+81                                8AC03060
0DE4 00 4C180DCD          BSC  L  LH05,+-                                8AC03070
0DE6 00 44000DF6          BSI  L  HT0B                                   8AC03080
0DE8 0  E80C              OR      TEMP1                                  8AC03090
0DE9 0  7101              MDX  1 1                                       8AC03100
0DEA 0  72FF              MDX  2 -1                                      8AC03110
0DEB 0  70F4              MDX     HB10                                   8AC03120
0DEC 00 67800DB9          LDX  I3 PCAM                                   8AC03130
0DEE 00 D7000E17          STO  L3 CDIN                                   8AC03140
0DF0 00 74010DB9          MDX  L  PCAM,1                                 8AC03150
0DF2 0  7101              MDX  1 1                                       8AC03160
0DF3 0  70EA              MDX     HB06                                   8AC03170
0DF4 0  70D8              MDX     LH05                                   8AC03180
0DF5    0001        TEMP1 BSS     1                                      8AC03190
                    *                                                    8AC03200
                    *  THIS SUBROUTINE CONVERTS HEX TO BEIN C AC)        8AC03210
                    *   AND LEAVES RESULT IN ACCUMULATOR                 8AC03220
                    *                                                    8AC03230
0DF6    0001        HT0B  BSS     1                                      8AC03240
0DF7 00 4C100E00          BSC  L  HT10,-                                 8AC03250
0DF9 0  6306              LDX  3 6                                       8AC03260
0DFA 0  1002              SLA     2                                      8AC03270
0DFB 0  13C0              SLC     3                                      8AC03280
0DFC 00 C7000E07          LD   L3 HT81                                   8AC03290
0DFE 00 4C800DF6          BSC  I  HT0B                                   8AC03300
0E00 0  630A        HT10  LDX  3 10                                      8AC03310
0E01 0  1001              SLA     1                                      8AC03320
0E02 0  13C0              SLC     3                                      8AC03330
0E03 00 C7000E0D          LD   L3 HT82                                   8AC03340
0E05 00 4C800DF6          BSC  I  HT0B                                   8AC03350
0E07 0  000F        HT81  DC      /000F                                  8AC03360
0E08 0  000E              DC      /000E                                  8AC03370
0E09 0  000D              DC      /000D                                  8AC03380
0E0A 0  000C              DC      /000C                                  8AC03390
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0E0B 0  000B              DC      /000B                                  8AC03400
0E0C 0  000A              DC      /000A                                  8AC03410
0E0D 0  0009        HTB2  DC      /0009                                  8AC03420
0E0E 0  0008              DC      /0008                                  8AC03430
0E0F 0  0007              DC      /0007                                  8AC03440
0E10 0  0006              DC      /0006                                  8AC03450
0E11 0  0005              DC      /0005                                  8AC03460
0E12 0  0004              DC      /0004                                  8AC03470
0E13 0  0003              DC      /0003                                  8AC03480
0E14 0  0002              DC      /0002                                  8AC03490
0E15 0  0001              DC      /0001                                  8AC03500
0E16 0  0000              DC      /0000                                  8AC03510
0E17    005C        CDIN  BSS     80                                     8AC03520
0E20                BIDA  EQU     CDIN+9                                 8AC03530
012A                UPPER EQU     298                                    8AC03540
                    ** ************************************************* 8AC03550
0E67 0  0826        BLA   XIO     DSWOQ      SEN READER                  8AC03560
0E6B 00 4C040E67          BSC  L  BLA,E      BR READER NOT READY         8AC03570
0E6A 00 0C000CEE          XIO  L  SENBI                                  8AC03580
0E6C 0  1808              SRA     8                                      8AC03590
0E6D 00 F4000D84          EOR  L  FEED                                   8AC03600
0E6F 00 D4000D85          STO  L  BITS                                   8AC03610
0E71 00 4C180E92          BSC  L  TOOT,+-    BR READ AUX LOADER          8AC03620
0E73 0  0818        BBB   XIO     RDIN       READ CARD                   8AC03630
0E74 0  0819        ABB   XIO     DSWOQ      SENSE READER                8AC03640
0E75 00 4C040E74          BSC  L  ABB,E      BR READER NOT READY         8AC03650
0E77 0  6126              LDX  1 38                                      8AC03660
0E78 0  C013              LD      RDIN                                   8AC03670
0E79 0  D004              STO     DHECK+1                                8AC03680
0E7A 0  C015              LD      DEOFF                                  8AC03690
0E7B 0  1802              SRA     2                                      8AC03700
0E7C 0  D013              STO     DEOFF                                  8AC03710
0E7D 00 85000000    DHECK A    L1 0                                      8AC03720
0E7F 0  71FF              MDX  1 -1                                      8AC03730
0E80 0  70FC              MDX     DHECK                                  8AC03740
0E81 00 4C200E8A          BSC  L  INIZA,Z    BR CARD IN WRONG            8AC03750
0E83 00 74180E8C          MDX  L  RDIN,27                                8AC03760
0E85 0  C00A              LD      DEOFF                                  8AC03770
0E86 00 4C200E73          BSC  L  BBB,Z      BR READ MORE CARDS          8AC03780
                    *             ALL CARDS LOADED AND CHECKED           8AC03790
0E88 00 4C0000D5D         BSC  L  HEXA       BR ALL AUX CARDS READ       8AC03800
                    ************************************************** 8AC03810
                    *             THE AUX 8-8 CARDS FAILED TO READ IN    8AC03820
                    *             * CORRECTLY. CHECK FOR PROPER CARD     8AC03830
                    *             * SEQUENCE AND TRY AGAIN               8AC03840
0E8A 0  3000        INIZA WAIT                                           8AC03850
0E8B 0  70FE              MDX     *-2                                    8AC03860
                    ************************************************** 8AC03870
0E8C    0000              BSS  E  0                                      8AC03880
0E8C 0  0536        RDIN  DC      /0536      INITIAL READ IN ADDRESS     8AC03890
0E8D 0  0601              DC      /0601                                  8AC03900
0E8E 0  0000        DSWOQ DC      0                                      8AC03910
0E8F 0  0703              DC      /0703                                  8AC03920
0E90 0  1802        DEOFF DC      /1802      COUNTER AND ID              8AC03930
0E91 0  0500        D300  DC      /0500                                  8AC03940
                    ************************************************** 8AC03950
0E92 00 0C000D7A    TOOT  XIO  L  RBOT1      READ 1ST BOOT               8AC03960
0E94 00 0C000E8E          XIO  L  DSWOQ      SENSE READER                8AC03970
0E96 00 4C040E94          BSC  L  *-4,E                                  8AC03980
0E98 00 0C000D7C          XIO  L  RBOT2      READ 2ND BOOT               8AC03990
0E9A 00 0C000E8E          XIO  L  DSWOQ      SENSE READER                8AC04000
0E9C 00 4C040E9A          BSC  L  *-4,E                                  8AC04010
                    ********************************************         8AC04020
                    *                                                    8AC04030
                    *             READ AND CHECK CARD 2 AND 3 OF AUX     8AC04040
                    *             * LOADER                               8AC04050
0E9E 0  7009              MDX     FIRA                                   8AC04060
0E9F 00 C4000D86    FIRSQ LD   L  CEOFX                                  8AC04070
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0EA1 0  D006          STO    FIRA                                  8AC04080
0EA2 00 0C000D78  KK  XIO  L RDIX      READ CARD                   8AC04090
0EA4 00 0C000E8E      XIO  L DSWOQ     SENSE READER                8AC04100
0EA6 00 4C040EA4      BSC  L *-4,E                                 8AC04110
0EA8 0  70F6      FIRA MDX    FIRSQ    MDX OR NO OP                8AC04120
0EA9 0  6126          LDX  1 38                                    8AC04130
0EAA 00 C40C0D78      LD   L RDIX                                  8AC04140
0EAC 0  D006          STO    CHECZ+1                               8AC04150
0EAD 00 C4000D86      LD   L CEOFX                                 8AC04160
0EAF 0  1802          SRA    2                                     8AC04170
0EB0 00 D4000D86      STO  L CEOFX                                 8AC04180
0EB2 00 85000000  CHECZ A    L1 0                                  8AC04190
0EB4 0  71FF          MDX  1 -1                                    8AC04200
0EB5 0  70FC          MDX    CHECZ                                 8AC04210
0EB6 0  4820          BSC    Z         SKIP CARD IN CORE OK        8AC04220
0EB7 0  70FF      A   MDX    A         FAILED TO LOAD AUX LOADER   8AC04230
0EB8 00 74180D78      MDX  L RDIX,27                                8AC04240
0EBA 00 C4000D86      LD   L CEOFX                                 8AC04250
0EBC 00 F4000D87      EOR  L CEOX                                  8AC04260
0EBE 00 4C200EA2      BSC  L KK,Z       BR READ MORE CARDS         8AC04270
                  *         THE ACTUAL AUX LOADER IN CORE OK       8AC04280
                  *         READ OVERLAY CARDS                     8AC04290
0EC0 00 4C000D5D      BSC  L HEXA                                  8AC04300
                  ********************************************** 8AC04310
                  *                                              8AC04320
                  *                                              8AC04330
                  *   BOOTSTRAP PUNCH ROUTINE                    8AC04340
                  *                                              8AC04350
0EC2 00 65000500  BOOT LDX  L1 /500     SET ADDR OF DATA          8AC04360
0EC4 00 6D000CEC       STX  L1 PUN      * TO BE PUNCHED  (BOOT 1) 8AC04370
0EC6 0  6128      LA   LDX   1 40       COUNTER                   8AC04380
0EC7 0  6200           LDX   2 0                                   8AC04390
0EC8 00 67000335       LDX  L3 /335     PUNCH TABLE ADDR AT /336  8AC04400
0ECA 00 C4000CEC       LD   L PUN                                  8AC04410
0ECC 0  D003           STO    SPLAS+1                              8AC04420
0ECD 0  10A0      NIGS SLT    32                                   8AC04430
0ECE 0  7301           MDX    3 1                                  8AC04440
0ECF C0 C6000000  SPLAS LD   L2 0       OBTAIN DATA FROM CARD READ 8AC04450
0ED1 0  18D8           RTE    24                                   8AC04460
0ED2 00 D7000000       STO  L3 0        STORE IN PUNCH TABLE      8AC04470
0ED4 0  7301           MDX    3 1                                  8AC04480
0ED5 0  1098           SLT    24                                   8AC04490
0ED6 00 D7000000       STO  L3 0        STORE IN PUNCH TABLE      8AC04500
0ED8 0  7201           MDX    2 1                                  8AC04510
0ED9 0  71FF           MDX    1 -1                                 8AC04520
0EDA 0  70FZ           MDX    NIGS                                 8AC04530
0EDB 00 C4000385       LD   L /385      PLACE PUNCH TERMINATOR    8AC04540
0EDD 00 EC000CE9       OR   L TWELV     *                         8AC04550
0EDF 00 D4000385       STO  L /385      *                         8AC04560
0EE1 00 0C000E8E       XIO  L DSWOQ     SENSE DEVICE STATUS       8AC04570
0EE3 00 0C000CF0       XIO  L PUNCH     PUNCH CARD IN 8-8 FORMAT  8AC04580
0EE5 00 0C000E8E       XIO  L DSWOQ     SENSE READER              8AC04590
0EE7 00 4C040EE5       BSC  L *-,,E                               8AC04600
0EE9 00 65000550  GO   LDX  L1 /550     SET ADDR OF DATA TO BE    8AC04610
0EEB 00 6D000CEC       STX  L1 PUN      * PUNCHED (BOOT 2)        8AC04620
0EED 00 4C000CFA  ABQ  BSC  L 800                                  8AC04630
                  ********************************************** 8AC04640
                  *                                              8AC04650
                  *                                              8AC04660
                  *       AUX LOADER PUNCH ROUTINE               8AC04670
                  *                                              8AC04680
0EEF 00 65000600  LOAD LDX  L1 /600     SET ADDR OF DATA TO BE PU 8AC04690
0EF1 00 6D000CEC       STX  L1 PUN                                 8AC04700
0EF3 00 4C000D0A       BSC  L MORE                                 8AC04710
                  ********************************************** 8AC04720
0EF5 00 C4000CF1  EDIT LD   L PUNCH+1                              8AC04730
0EF7 00 EC000CE4       OR   L AREA                                 8AC04740
0EF9 00 D4000CF1       STO  L PUNCH+1                              8AC04750
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0EFB 00 C4000D77      LD   L STRD+1                                 8AC04760
0EFD 00 EC000CE4      OR   L AREA                                   8AC04770
0EFF 00 D4000D77      STO  L STRD+1                                 8AC04780
0F01 00 C4000D79      LD   L RDIX+1                                 8AC04790
0F03 00 EC000CE4      OR   L AREA                                   8AC04800
0F05 00 D4000D79      STO  L RDIX+1                                 8AC04810
0F07 00 C4000D78      LD   L RBOT1+1                                8AC04820
0F09 00 EC000CE4      OR   L AREA                                   8AC04830
0F0B 00 D4000D7B      STO  L RBOT1+1                                8AC04840
0F0D 00 C4000D7D      LD   L RBOT2+1                                8AC04850
0F0F 00 EC000CE4      OR   L AREA                                   8AC04860
0F11 00 D4000D7D      STO  L RBOT2+1                                8AC04870
0F13 00 C4000D7F      LD   L ESW+1                                  8AC04880
0F15 00 EC000CE4      OR   L AREA                                   8AC04890
0F17 00 D4000D7F      STO  L ESW+1                                  8AC04900
0F19 00 C4000D81      LD   L REDSW+1                                8AC04910
0F1B 00 EC000CE4      OR   L AREA                                   8AC04920
0F1D 00 D4000D81      STO  L REDSW+1                                8AC04930
0F1F 00 C4000E8D      LD   L RDIN+1                                 8AC04940
0F21 00 EC000CE4      OR   L AREA                                   8AC04950
0F23 00 D4000E8D      STO  L RDIN+1                                 8AC04960
0F25 00 C4000E9F      LD   L DSWOQ+1                                8AC04970
0F27 00 EC000CE4      OR   L AREA                                   8AC04980
0F29 00 D4000E8F      STO  L DSWOQ+1                                8AC04990
0F2B 00 4C000E67      BSC  L BLA                                    8AC05000
0F2E     0EF5         END    EDIT                                   8AC05010
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1627

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
A	0EB7	0EB7
ABB	0E74	0E75
ABQ	0EED	0CFB
ADD	0CE6	0D22
AREA	0CE4	0EF7,0EFD,0F03,0F09,0F0F,0F15,0F18,0F21,0F27
AUXX	0D07	CCF5
BBB	0E73	0E86
BIDA	0E20	0DA6
BITS	0D85	0CF3,0E6F
BLA	0E67	0E63,0F2B
BLK	0D5A	
BOO	0CFA	0EED
BOOT	0EC2	0CF7
BT1	0D8B	0DD3
BT2	0DC7	0DD6
BT3	0DC1	0DD9
CDIN	0E17	0D6F,0D76,0D8E,0D91,0D95,0DA1,0DAA,0DAD,0DAE,0DCD, 0DE2,0DEE,0E67
CEOFF	0CF2	0D1A,0D1C
CEOFX	0D86	0E9F,0EAD,0EB0,0EBA
CEOX	0D87	0EBC
CHECK	0D1D	0D18,0D20
CHECZ	0EB2	0EAC,0EB5
DEOFF	0E90	0E7A,0E7C,0E85
DHECK	0E7D	0E79,0E80
DSWOQ	0E8E	0D01,0D56,0E67,0E74,0E94,0E9A,0EA4,0EE1,0EE5,0F25, 0F29
D300	0E91	0D5D
EDIT	0EF5	0F2D
EOR	0CE8	0CFF,0D2C
ESW	0D7E	0D63,0F13,0F17
FEED	0D84	0E6D
FFFF	0CE5	0D21
FIRA	0EA8	0E9E,0EA1
FIRSQ	0E9F	0EA8
GO	0EE9	
HASH	0D24	0D19
HB05	0DD2	0D71
HB06	0DDE	0DF3
HB10	0DE0	0DE8
HES	0DDB	0DBF,0DC5,0DCB
HEXA	0D5D	0E88,0EC0
HTB1	0E07	0DFC
HTB2	0E0D	0E03
HTOB	0DF6	0DE6,0DFE,0E05
HT10	0E00	0DF7
INIZA	0E8A	0E81
KK	0E42	0EBE
LA	0EC6	0D05
LB05	0DA1	0D9D
LB06	0DA8	0DD1
LB10	0DB0	0DA9,0DB7
LB15	0DBA	0DA2
LH05	0DCD	0DE4,0DF4
LO	0CF9	0CFA
LOAD	0EEF	0CF9
MOQ	0CF3	0DA4
MOR	0D01	0D03
MORE	0D0A	0D5A,0EF3
MSK	0D74	0D61
MSK2	0D82	0D66
MSK3	0D83	0D6A
NIG	0D35	0D42
NIGS	0ECD	0EDA
NUM	0D2A	0D17

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1627

NUMBE	0CE7	0D27,0D29
PCAM	0DB9	0DA3,0D35,0DCF,0DDD,0DEC,0DF0
PUN	0CEC	0D09,0D0B,0D16,0D33,0D49,0D54,0EC4,0ECA,0EE8,0EF1
PUNCH	0CF0	0D48,0EE3,0EF5,0EF9
RBOT1	0D7A	0E92,0F07,0F08
RBOT2	0D7C	0E98,0F0D,0F11
RDIN	0E8C	0E73,0E78,0E83,0F1F,0F23
RDIX	0D78	0EA2,0EAA,0EB8,0F01,0F05
RD05	0D61	
RD20	0D62	0D88
RD25	0D63	0D64,0D6D
RD30	0D6A	0D68
RD40	0D6C	0D67
RD50	0D6E	0D69
RD55	0D71	
REDSW	0D80	0D3E,0F19,0F1D
SAV	0D0E	0D0C
SAVA	0D4E	0D4A
SAVE	0D12	0D0D
SAVEA	0D5Z	0D4B
SB05	0D88	0D73
SB06	0D8A	0D9C
SB07	0D8B	0D9A
SB10	0D94	0D8D
SENBI	0CEE	0E6A
SL	0D9E	0D8B
SPLA	0D37	0D34
SPLAS	0ECF	0ECC
STRD	0D76	0D62,0EFB,0EFF
TEMP1	0DF5	0DE1,0DE8
TOOT	0E92	0E71
TWELV	0CE9	0D45,0EDD
UPPER	012A	0D5F,0DAB,0DBD,0DC3,0DC9
WAIT	0D5B	0D2D
X38	0CEA	0D10,0D4D
X39	0CEB	0D14,0D51

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1816

```
                        ABS                                                 8AC41340
028C                    ORG     /36                                         8AC41350
                    *                                                       8AC41360
                    ************************************************        8AC41370
0800                AREA  EQU     /0800      1ST 1053 AREA CODE           8AC41380
                    *       IF THIS PROG IS TO BE USED FOR A MACH           8AC41390
                    * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH         8AC41400
                    * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST      8AC41410
                    * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A        8AC41420
                    * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG        8AC41430
                    * GENERATOR WRITE-UP FOR PROCEDURE.                    8AC41440
                    ************************************************        8AC41450
                    *                                                       8AC41460
                    *                                                       8AC41470
                    *           1816  SKELETON PROGRAM                      8AC41480
                    *           (SEE AUX CE PROG GENERATOR                  8AC41490
                    *           ****************************                8AC41500
                    * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE           8AC41510
                    *                                                       8AC41520
                    *                                                       8AC41530
                    *                                                       8AC41540
                    *                                                       8AC41550
                    *           PURPOSE                                     8AC41560
                    *              THE PURPOSE OF THIS PROGRAM IS           8AC41570
                    *              TO PROVIDE A SKELETON PROGRAM            8AC41580
                    *              UPON WHICH THE CE CAN WRITE AN           8AC41590
                    *              AUX STORAGE PROGRAM.                     8AC41600
                    *                                                       8AC41610
                    *                                                       8AC41620
                    *           GENERAL INSTRUCTIONS                        8AC41630
                    *           CE SWITCH SETTINGS                          8AC41640
                    *              00001111  CE SERVICE STOP                8AC41650
                    *              11111111  TERMINATE PROGRAM              8AC41660
                    *              ALL OTHER COMBINATIONS ARE STORED        8AC41670
                    *              * AT THE LOCATION  CESW  FOR             8AC41680
                    *              * POSSIBLE USE BY THE CE TO              8AC41690
                    *              * CONTROL HIS PROGRAM                    8AC41700
                    *                                                       8AC41710
                    *                                                       8AC41720
                    ************************************************        8AC41730
                    *                                                       8AC41740
                    *                                                       8AC41750
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I     8AC41760
                    *           CORRECTIONS FOR THE FOLLOWING 27    *       8AC41770
                    *           WORDS MUST BE MADE IN THE CARD      *       8AC41780
                    *           NUMBERED X OF THIS AUX PROGRAMS     *       8AC41790
                    *           7 CARD OBJECT DECK.                 *       8AC41800
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I     8AC41810
                    *                                                       8AC41820
                    *                                                       8AC41830
                    *                                                       8AC41840
                    *           AUX PROG ENTRY POINTS                       8AC41850
                    *           *********************                       8AC41860
                    *                                                       8AC41870
                    *           1ST PASS ENTRY                              8AC41880
                    *           **************                              8AC41890
                    *                                                       8AC41900
0036 0  C01B                LD      DSW52       RESTORE LOC NICE            8AC41910
0037 0  D0FD                STO     /35         * IN AUX LOADER             8AC41920
                    *                                                       8AC41930
0038 0  C01D                LD      CEOFF       PLACE BRANCH                8AC41940
0039 0  D0CA                STO     /04         * TO RETUR LABEL            8AC41950
                    *                                                       8AC41960
                    *           ALL BUT 1ST PASS ENTRY POINT                8AC41970
                    *           ****************************                8AC41980
003A 0  0819        RETUR XIO     CEON        SET DEVICE IN CE MODE       8AC41990
003B 0  6A21              STX   2 SAVE2+1     SAVE INDEX REGISTER 2       8AC42000
003C 0  6B22              STX   3 SAVE3+1     SAVE INDEX REGISTER 3       8AC42010
```


AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1816

```
003D 0  0814                XIO     DSW52       SENSE DEVICE STATUS         8AC42020
003E 0  D024                STO     STATU       SAVE DEVICE STATUS          8AC42030
003F 0  0810                XIO     SENBI       SENSE CE PROG SW TO ACCUM   8AC42040
0040 0  E00F                AND     SENBI       BLOCK OUT PROG SEL SW       8AC42050
0041 0  D020                STO     CESW        SAVE CE PROG SW SETTINGS    8AC42060
0042 0  F00D                EOR     SENBI                                   8AC42070
0043 00 4C180058            BSC  L  NOTRD,+-    BR TERMINATE PROGRAM        8AC42080
0045 0  F00E                EOR     CEON                                    8AC42090
0046 00 4C18005C            BSC  L  SAVE2,+-     BR SERVICE STOP            8AC42100
0048 00 CC00004E            LDD  L  TERM                                    8AC42110
004A 00 DC0000FE            STD  L  /00FE       SET TERMINATOR BR AT END    8AC42120
                    *                           * OF AUX CORE AS A SAFETY   8AC42130
                    *                           * PRECAUTION                8AC42140
                    *                                                       8AC42150
004C 00 4C000060            BSC  L  CEGO        BR TO DO IT YOURSELF PROG   8AC42160
004E 00 4C000058    TERM    BSC  L  NOTRD       TERMINATOR BRANCH           8AC42170
                    ************************************************        8AC42180
                    *                                                       8AC42190
                    *           CONSTANTS AND/OR IOCC WORDS                 8AC42200
0050    0000                BSS  E  0                                       8AC42210
0050 0  00FF        SENBI   DC      /00FF       TERMINATOR CONSTANT         8AC42220
                    *                                                       8AC42230
                    *                                                       8AC42240
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I     8AC42250
                    *           CORRECTIONS FOR THE FOLLOWING 27    *       8AC42260
                    *           WORDS MUST BE MADE IN THE CARD      *       8AC42270
                    *           NUMBERED 0 OF THIS AUX PROGRAMS     *       8AC42280
                    *           7 CARD OBJECT DECK.                 *       8AC42290
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I     8AC42300
                    *                                                       8AC42310
                    *                                                       8AC42320
0051 0  0760                DC      /0760       SENSE CE SWITCHES           8AC42330
0052 0  7007        DSW52   DC      NNNN                                    8AC42340
0053 0  0F03                DC      /0703+AREA  RESET DEVICE STATUS IOCC    8AC42350
0054 0  00F0        CEON    DC      /00F0       CE SERVICE STOP CONST       8AC42360
0055 0  0803                DC      /0003+AREA  CE ON WORD                  8AC42370
0056 0  7035        CEOFF   DC      TTTT                                    8AC42380
0057 0  0802                DC      /0002+AREA  CE OFF WORD                 8AC42390
                    ************************************************        8AC42400
                    *                                                       8AC42410
                    *           EXIT POINTS TO AUX LOADER                   8AC42420
                    *           *************************                   8AC42430
                    *                                                       8AC42440
                    *           TERMINATE EXIT POINT                        8AC42450
0058 00 65000813    NOTRD   LDX   L1 WWWW                                   8AC42460
005A 0  69A9                STX     1 /04                                   8AC42470
005B 0  08FA                XIO     CEOFF       REMOVE DEVICE FROM CE MODE  8AC42480
                    *                                                       8AC42490
                    *           NORMAL EXIT POINT                           8AC42500
005C 00 66000000    SAVE2   LDX   L2 0                                      8AC42510
005E 00 67000000    SAVE3   LDX   L3 0                                      8AC42520
                    *                                                       8AC42530
0060 0  70AC                MDX     QQQQ                                    8AC42540
                    ************************************************        8AC42550
                    ************************************************        8AC42560
                    ************************************************        8AC42570
                    *                                                       8AC42580
                    *           THE FOLLOWING CONSTANTS AND IOCC            8AC42590
                    *           WORDS HAS BEEN PLACED HERE TO AID           8AC42600
                    *           THE CE IN HIS PROGRAMMING EFFORT.           8AC42610
                    *                                                       8AC42620
0061 0  70F6                MDX     NOTRD       THIS LOC IS NOT USED        8AC42630
0062    0000                BSS  E  0                                       8AC42640
0062 0  0000        CESW    DC      0           CE PROGRAM SW SETTING       8AC42650
0063 0  0000        STATU   DC      0           DEVICE STATUS WORD          8AC42660
                    *                                                       8AC42670
0064 0  006B        WRITE   DC      OUTWD       REFERS TO OUTPUT CHAR.      8AC42680
0065 0  0902                DC      /0102+AREA      IOCC WRITE WORD         8AC42690
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1816

```
                        *                                                   8AC42700
0066 0  006A    READ    DC      INWD        REFERS TO INPUT CHAR.           8AC42710
0067 0  0A02            DC      /0202+AREA  IOCC READ CHAR WORD             8AC42720
                        *                                                   8AC42730
0068 0  70EF    CTRL    MDX     NOTRD       THIS WD IS NOT USED             8AC42740
0069 0  0C02            DC      /0402+AREA  IOCC CTRL WD TO PLACE           8AC42750
                        *                   KEYBOARD IN READY STATUS        8AC42760
                        *                                                   8AC42770
006A 0  0000    INWD    DC      0           INPUT CHAR PLACED HERE          8AC42780
006B 0  0000    OUTWD   DC      0           PLACE OUTPUT CHAR. HERE         8AC42790
                        *********************************************       8AC42800
                        *                                                   8AC42810
                        *                                                   8AC42820
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC42830
                        *           CORRECTIONS FOR THE FOLLOWING 27    *   8AC42840
                        *           WORDS MUST BE MADE IN THE CARD      *   8AC42850
                        *           NUMBERED 1 OF THIS AUX PROGRAMS     *   8AC42860
                        *           7 CARD OBJECT DECK.                 *   8AC42870
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC42880
                        *                                                   8AC42890
                        *                                                   8AC42900
                        *                                                   8AC42910
                        *                                                   8AC42920
                        *                                                   8AC42930
                        *           THIS IS THE STARTING POINT OF YOUR      8AC42940
                        *           PROGRAM.                                8AC42950
                        *           FROM HERE ON YOU ARE ON YOUR OWN.       8AC42960
                        *           GOOD LUCK.                              8AC42970
                        *                                                   8AC42980
                        *                                                   8AC42990
006C 0  70EB    CEGO    MDX     NOTRD       1ST LOC OF YOUR PROGRAM         8AC43000
                        *           BRANCH TO LOCATION  SAVE2   WHEN        8AC43010
                        *           EXITING FROM YOUR PROGRAM.              8AC43020
006D 0  70EA            MDX     NOTRD                                       8AC43030
006E 0  70E9            MDX     NOTRD                                       8AC43040
006F 0  70E8            MDX     NOTRD                                       8AC43050
0070 0  70E7            MDX     NOTRD                                       8AC43060
0071 0  70E6            MDX     NOTRD                                       8AC43070
0072 0  70E5            MDX     NOTRD                                       8AC43080
0073 0  70E4            MDX     NOTRD                                       8AC43090
0074 0  70E3            MDX     NOTRD                                       8AC43100
0075 0  70E2            MDX     NOTRD                                       8AC43110
0076 0  70E1            MDX     NOTRD                                       8AC43120
0077 0  70E0            MDX     NOTRD                                       8AC43130
0078 0  70DF            MDX     NOTRD                                       8AC43140
0079 0  70DE            MDX     NOTRD                                       8AC43150
007A 0  70DD            MDX     NOTRD                                       8AC43160
007B 0  70DC            MDX     NOTRD                                       8AC43170
007C 0  70DB            MDX     NOTRD                                       8AC43180
007D 0  70DA            MDX     NOTRD                                       8AC43190
007E 0  70D9            MDX     NOTRD                                       8AC43200
007F 0  70D8            MDX     NOTRD                                       8AC43210
0080 0  70D7            MDX     NOTRD                                       8AC43220
0081 0  70D6            MDX     NOTRD                                       8AC43230
0082 0  70D5            MDX     NOTRD                                       8AC43240
0083 0  70D4            MDX     NOTRD                                       8AC43250
0084 0  70D3            MDX     NOTRD                                       8AC43260
0085 0  70D2            MDX     NOTRD                                       8AC43270
0086 0  70D1            MDX     NOTRD                                       8AC43280
                        *                                                   8AC43290
                        *                                                   8AC43300
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC43310
                        *           CORRECTIONS FOR THE FOLLOWING 27    *   8AC43320
                        *           WORDS MUST BE MADE IN THE CARD      *   8AC43330
                        *           NUMBERED 2 OF THIS AUX PROGRAMS     *   8AC43340
                        *           7 CARD OBJECT DECK.                 *   8AC43350
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC43360
                        *                                                   8AC43370
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AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1816

```
                        *                                                   8AC43380
0087 0  70D0            MDX     NOTRD                                       8AC43390
0088 0  70CF            MDX     NOTRD                                       8AC43400
0089 0  70CE            MDX     NOTRD                                       8AC43410
008A 0  70CD            MDX     NOTRD                                       8AC43420
008B 0  70CC            MDX     NOTRD                                       8AC43430
008C 0  70CB            MDX     NOTRD                                       8AC43440
008D 0  70CA            MDX     NOTRD                                       8AC43450
008E 0  70C9            MDX     NOTRD                                       8AC43460
008F 0  70C8            MDX     NOTRD                                       8AC43470
0090 0  70C7            MDX     NOTRD                                       8AC43480
0091 0  70C6            MDX     NOTRD                                       8AC43490
0092 0  70C5            MDX     NOTRD                                       8AC43500
0093 0  70C4            MDX     NOTRD                                       8AC43510
0094 0  70C3            MDX     NOTRD                                       8AC43520
0095 0  70C2            MDX     NOTRD                                       8AC43530
0096 0  70C1            MDX     NOTRD                                       8AC43540
0097 0  70C0            MDX     NOTRD                                       8AC43550
0098 0  708F            MDX     NOTRD                                       8AC43560
0099 0  708E            MDX     NOTRD                                       8AC43570
009A 0  708D            MDX     NOTRD                                       8AC43580
009B 0  708C            MDX     NOTRD                                       8AC43590
009C 0  708B            MDX     NOTRD                                       8AC43600
009D 0  708A            MDX     NOTRD                                       8AC43610
009E 0  7089            MDX     NOTRD                                       8AC43620
009F 0  7088            MDX     NOTRD                                       8AC43630
00A0 0  7087            MDX     NOTRD                                       8AC43640
00A1 0  7086            MDX     NOTRD                                       8AC43650
                        *                                                   8AC43660
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC43670
                        *           CORRECTIONS FOR THE FOLLOWING 27    *   8AC43680
                        *           WORDS MUST BE MADE IN THE CARD      *   8AC43690
                        *           NUMBERED 3 OF THIS AUX PROGRAMS     *   8AC43700
                        *           7 CARD OBJECT DECK.                 *   8AC43710
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC43720
                        *                                                   8AC43730
                        *                                                   8AC43740
00A2 0  7085            MDX     NOTRD                                       8AC43750
00A3 0  7084            MDX     NOTRD                                       8AC43760
00A4 0  7083            MDX     NOTRD                                       8AC43770
00A5 0  7082            MDX     NOTRD                                       8AC43780
00A6 0  7081            MDX     NOTRD                                       8AC43790
                        *                                                   8AC43800
00A7 0  7080            MDX     NOTRD                                       8AC43810
00A8 0  70AF            MDX     NOTRD                                       8AC43820
00A9 0  70AE            MDX     NOTRD                                       8AC43830
00AA 0  70AD            MDX     NOTRD                                       8AC43840
00AB 0  70AC            MDX     NOTRD                                       8AC43850
00AC 0  70AB            MDX     NOTRD                                       8AC43860
00AD 0  70AA            MDX     NOTRD                                       8AC43870
00AE 0  70A9            MDX     NOTRD                                       8AC43880
00AF 0  70A8            MDX     NOTRD                                       8AC43890
0080 0  70A7            MDX     NOTRD                                       8AC43900
0081 0  70A6            MDX     NOTRD                                       8AC43910
0082 0  70A5            MDX     NOTRD                                       8AC43920
0083 0  70A4            MDX     NOTRD                                       8AC43930
0084 0  70A3            MDX     NOTRD                                       8AC43940
0085 0  70A2            MDX     NOTRD                                       8AC43950
0086 0  70A1            MDX     NOTRD                                       8AC43960
0087 0  70A0            MDX     NOTRD                                       8AC43970
0088 0  709F            MDX     NOTRD                                       8AC43980
0089 0  709E            MDX     NOTRD                                       8AC43990
008A 0  709D            MDX     NOTRD                                       8AC44000
008B 0  709C            MDX     NOTRD                                       8AC44010
008C 0  7098            MDX     NOTRD                                       8AC44020
                        *                                                   8AC44030
                        *                                                   8AC44040
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC44050
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                        *            CORRECTIONS FOR THE FOLLOWING 27   *  8AC44060
                        *            WORDS MUST BE MADE IN THE CARD     *  8AC44070
                        *            NUMBERED 4 OF THIS AUX PROGRAMS    *  8AC44080
                        *            7 CARD OBJECT DECK.                *  8AC44090
                       *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC44100
                        *                                                  8AC44110
                        *                                                  8AC44120
008D 0  709A                 MDX     NOTRD                                 8AC44130
008E 0  7099                 MDX     NOTRD                                 8AC44140
008F 0  7098                 MDX     NOTRD                                 8AC44150
00C0 0  7097                 MDX     NOTRD                                 8AC44160
00C1 0  7096                 MDX     NOTRD                                 8AC44170
00C2 0  7095                 MDX     NOTRD                                 8AC44180
00C3 0  703A                 MDX     /00FE                                 8AC44190
00C4 0  7039                 MDX     /00FE                                 8AC44200
00C5 0  7038                 MDX     /00FE                                 8AC44210
00C6 0  7037                 MDX     /00FE                                 8AC44220
00C7 0  7036                 MDX     /00FE                                 8AC44230
00C8 0  7035                 MDX     /00FE                                 8AC44240
00C9 0  7034                 MDX     /00FE                                 8AC44250
00CA 0  7033                 MDX     /00FE                                 8AC44260
00CB 0  7032                 MDX     /00FE                                 8AC44270
00CC 0  7031                 MDX     /00FE                                 8AC44280
00CD 0  7030                 MDX     /00FE                                 8AC44290
00CE 0  702F                 MDX     /00FE                                 8AC44300
00CF 0  702E                 MDX     /00FE                                 8AC44310
00D0 0  702D                 MDX     /00FE                                 8AC44320
00D1 0  702C                 MDX     /00FE                                 8AC44330
00D2 0  7028                 MDX     /00FE                                 8AC44340
00D3 0  702A                 MDX     /00FE                                 8AC44350
00D4 0  7029                 MDX     /00FE                                 8AC44360
00D5 0  7028                 MDX     /00FE                                 8AC44370
00D6 0  7027                 MDX     /00FE                                 8AC44380
00D7 0  7026                 MDX     /00FE                                 8AC44390
                        *                                                  8AC44400
                        *                                                  8AC44410
                       *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC44420
                        *            CORRECTIONS FOR THE FOLLOWING 38   *  8AC44430
                        *            WORDS MUST BE MADE IN THE CARD     *  8AC44440
                        *            NUMBERED 5 OF THIS AUX PROGRAMS    *  8AC44450
                        *            7 CARD OBJECT DECK.                *  8AC44460
                       *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC44470
                        *                                                  8AC44480
                        *                                                  8AC44490
00D8 0  7025                 MDX     /00FE                                 8AC44500
00D9 0  7024                 MDX     /00FE                                 8AC44510
00DA 0  7023                 MDX     /00FE                                 8AC44520
00DB 0  7022                 MDX     /00FE                                 8AC44530
00DC 0  7021                 MDX     /00FE                                 8AC44540
00DD 0  7020                 MDX     /00FE                                 8AC44550
00DE 0  701F                 MDX     /00FE                                 8AC44560
00DF 0  701E                 MDX     /00FE                                 8AC44570
00E0 0  701D                 MDX     /00FE                                 8AC44580
00E1 0  701C                 MDX     /00FE                                 8AC44590
00E2 0  701B                 MDX     /00FE                                 8AC44600
00E3 0  701A                 MDX     /00FE                                 8AC44610
00E4 0  7019                 MDX     /00FE                                 8AC44620
00E5 0  7018                 MDX     /00FE                                 8AC44630
00E6 0  7017                 MDX     /00FE                                 8AC44640
00E7 0  7016                 MDX     /00FE                                 8AC44650
00E8 0  7015                 MDX     /00FE                                 8AC44660
00E9 0  7014                 MDX     /00FE                                 8AC44670
00EA 0  7013                 MDX     /00FE                                 8AC44680
00EB 0  7012                 MDX     /00FE                                 8AC44690
00EC 0  7011                 MDX     /00FE                                 8AC44700
00ED 0  7010                 MDX     /00FE                                 8AC44710
00EE 0  700F                 MDX     /00FE                                 8AC44720
00EF 0  700E                 MDX     /00FE                                 8AC44730
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00F0 0  700D                 MDX     /00FE                                 8AC44740
00F1 0  700C                 MD .    /00FE                                 8AC44750
00F2 0  700B                 MDX     /00FE                                 8AC44760
00F3 0  700A                 MDX     /00FE                                 8AC44770
00F4 0  7009                 MDX     /00FE                                 8AC44780
00F5 0  7008                 MDX     /00FE                                 8AC44790
00F6 0  7007                 MDX     /00FE                                 8AC44800
00F7 0  7006                 MDX     /00FE                                 8AC44810
00F8 0  7005                 MDX     /00FE                                 8AC44820
00F9 0  7004                 MDX     /00FE                                 8AC44830
00FA 0  7003                 MDX     /00FE                                 8AC44840
00FB 0  7002                 MDX     /00FE                                 8AC44850
00FC 0  7001                 MDX     /00FE                                 8AC44860
00FD 0  7000                 MDX     /00FE                                 8AC44870
                        ************************************************** 8AC44880
                        *                                                  8AC44890
000D                    QQQQ  EQU    /D          GO TO LOADER AT /D        8AC44900
70D7                    NNNN  EQU    /70D7       FOR CARD LOADER AT /35    8AC44910
0813                    WWWW  EQU    /0813       SET IN LOADER AT /04      8AC44920
7035                    TTTT  EQU    /7000+RETUR-/4-1   THIS IS EQUAL TO   8AC44930
                        *                        THE BRANCH FROM THE LOADER 8AC44940
                        *                        TO RETUR IN THIS PROGRAM.  8AC44950
                        ************************************************** 8AC44960
00FE    00FD                 END     *-1         END CARD NEVER USED       8AC44970
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1816

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	0800	0053,0055,0057,0065,0067,0069
CEGO	006C	004C
CEOFF	0056	0038,005B
CEON	0054	003A,0045
CESW	0062	0041
CTRL	0068	
DSW52	0052	0036,003D
INWD	006A	0066
NNNN	70D7	0052
NOTRD	0058	0043,004E,0061,0068,006C,006D,006E,006F,0070,0071, 0072,0073,0074,0075,0076,0077,0078,0079,007A,007B, 007C,007D,007E,007F,0080,0081,0082,0083,0084,0085, 0086,0087,0088,0089,008A,008B,008C,008D,008E,008F, 0090,0091,0092,0093,0094,0095,0096,0097,0098,0099, 009A,009B,009C,009D,009E,009F,00A0,00A1,00A2,00A3, 00A4,00A5,00A6,00A7,00A8,00A9,00AA,00AB,00AC,00AD, 00AE,00AF,00B0,00B1,00B2,00B3,00B4,00B5,00B6,00B7, 00B8,00B9,00BA,00BB,00BC,00BD,00BE,00BF,00C0,00C1, 00C2
OUTWD	0068	0064
QQQQ	000D	0060
READ	0066	
RETUR	003A	00FE
SAVE2	005C	0038,0046
SAVE3	005E	003C
SENBI	0050	003F,0040,0042
STATU	0063	003E
TERM	004E	0048
TTTT	7035	0056
WRITE	0064	
WWWW	0813	0058

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1ST 2310

```
                        ABS                                              8AC44980
028C                    ORG     /36                                      8AC44990
                    *                                                    8AC45000
                    ****************************************************** 8AC45010
2000                AREA  EQU     /2000       1ST 2310 DISK              8AC45020
                    *         IF THIS PROG IS TO BE USED FOR A MACH      8AC45030
                    * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH       8AC45040
                    * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST    8AC45050
                    * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A      8AC45060
                    * MODIFIED AUX 8-3 OBJECT DECK. SEE AUX CE PROG      8AC45070
                    * GENERATOR WRITE-UP FOR PROCEDURE.                  8AC45080
                    ****************************************************** 8AC45090
                    *                                                    8AC45100
                    *                                                    8AC45110
                    *             1ST 2310  SKELETON PROGRAM             8AC45120
                    *             (SEE AUX CE PROG GENERATOR             8AC45130
                    *             * WRITE-UP FOR USE PROCEDURE)          8AC45140
                    *             ****************************           8AC45150
                    * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE         8AC45160
                    *                                                    8AC45170
                    *                                                    8AC45180
                    *                                                    8AC45190
                    *                                                    8AC45200
                    *             PURPOSE                                8AC45210
                    *                THE PURPOSE OF THIS PROGRAM IS      8AC45220
                    *                TO PROVIDE A SKELETON PROGRAM       8AC45230
                    *                UPON WHICH THE CE CAN WRITE AN      8AC45240
                    *                AUX STORAGE PROGRAM.                8AC45250
                    *                                                    8AC45260
                    *                                                    8AC45270
                    *             GENERAL INSTRUCTIONS                   8AC45280
                    *             CE SWITCH SETTINGS                     8AC45290
                    *                00001111  CE SERVICE STOP           8AC45300
                    *                11111111  TERMINATE PROGRAM         8AC45310
                    *                ALL OTHER COMBINATIONS ARE STORED   8AC45320
                    *                * AT THE LOCATION  CESW  FOR        8AC45330
                    *                * POSSIBLE USE BY THE CE TO         8AC45340
                    *                * CONTROL HIS PROGRAM               8AC45350
                    *                                                    8AC45360
                    *                                                    8AC45370
                    ****************************************************** 8AC45380
                    *                                                    8AC45390
                    *                                                    8AC45400
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC45410
                    *             CORRECTIONS FOR THE FOLLOWING 27    *  8AC45420
                    *             WORDS MUST BE MADE IN THE CARD      *  8AC45430
                    *             NUMBERED X OF THIS AUX PROGRAMS     *  8AC45440
                    *             7 CARD OBJECT DECK.                 *  8AC45450
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC45460
                    *                                                    8AC45470
                    *                                                    8AC45480
                    *                                                    8AC45490
                    *             AUX PROG ENTRY POINTS                  8AC45500
                    *             *********************                  8AC45510
                    *                                                    8AC45520
                    *             1ST PASS ENTRY                         8AC45530
                    *             ***************                        8AC45540
                    *                                                    8AC45550
0036 0  C01F            LD      DSW52       RESTORE LOC NICE            8AC45560
0037 0  D0FD            STO     /35         * IN AUX LOADER             8AC45570
                    *                                                    8AC45580
0038 0  C021            LD      CEOFF       PLACE BRANCH                8AC45590
0039 0  D0CA            STO     /04         * TO RETUR LABEL            8AC45600
                    *                                                    8AC45610
                    *             ALL BUT 1ST PASS ENTRY POINT           8AC45620
                    *             ****************************           8AC45630
003A 0  081D        RETUR XIO     CEON      SET DEVICE IN CE MODE       8AC45640
003B 0  6A25            STX   2 SAVE2+1     SAVE INDEX REGISTER 2       8AC45650
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003C 0  6826            STX   3 SAVE3+1     SAVE INDEX REGISTER 3       8AC45660
003D 0  0818            XIO     DSW52       SENSE DEVICE STATUS         8AC45670
003E 0  D028            STO     STATU       SAVE DEVICE STATUS          8AC45680
003F 0  E011            AND     GONE        REMOVE ALL DEVICE STATUS    8AC45690
                *                           * COND EXCEPT HOME IND.     8AC45700
0040 00 D4000065        STO   L HOME        PLACE HOME INDICATION WD    8AC45710
0042 0  0811            XIO     SENBI       SENSE CE PROG SW TO ACCUM   8AC45720
0043 0  E010            AND     SENBI       BLOCK OUT PROG SEL SW       8AC45730
0044 0  D021            STO     CESW        SAVE CE PROG SW SETTINGS    8AC45740
0045 0  F00E            EOR     SENBI                                   8AC45750
0046 00 4C18005C        BSC   L NOTRD,+-    BR TERMINATE PROGRAM        8AC45760
0048 0  F00F            EOR     CEDN                                    8AC45770
0049 00 4C180060        BSC   L SAVE2,+-     BR SERVICE STOP            8AC45780
004B 00 CC000052        LDD   L TERM                                    8AC45790
004D 00 DC0000FE        STD   L /00FE       SET TERMINATOR BR AT END    8AC45800
                *                           * OF AUX CORE AS A SAFETY   8AC45810
                *                           * PRECAUTION                8AC45820
                *                                                       8AC45830
004F 00 4C000075        BSC   L CEGO        BR TO DO IT YOURSELF PROG   8AC45840
                *                                                       8AC45850
                *                                                       8AC45860
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I      8AC45870
                *           CORRECTIONS FOR THE FOLLOWING 27    *       8AC45880
                *           WORDS MUST BE MADE IN THE CARD      *       8AC45890
                *           NUMBERED 0 OF THIS AUX PROGRAMS     *       8AC45900
                *           7 CARD OBJECT DECK.                 *       8AC45910
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I      8AC45920
                *                                                       8AC45930
                *                                                       8AC45940
0051 0  0800    GONE  DC      /0800       CONST TO REMOVE ALL BUT     8AC45950
                *                           * HOME INDICATER STATUS     8AC45960
0052    0000            BSS   E 0                                       8AC45970
0052 00 4C00005C TERM   BSC   L NOTRD       TERMINATOR BRANCH           8AC45980
                ********************************************************8AC45990
                *                                                       8AC46000
                *           CONSTANTS AND/OR IOCC WORDS                 8AC46010
0054    0000            BSS   E 0                                       8AC46020
0054 0  00FF    SENBI DC      /00FF       TERMINATOR CONSTANT         8AC46030
0055 0  0760          DC      /0760       SENSE CE SWITCHES           8AC46040
0056 0  70D7    DSW52 DC      NNNN                                    8AC46050
0057 0  2701          DC      /0701+AREA RESET DEVICE STATUS IOCC     8AC46060
0058 0  00F0    CEDN  DC      /00F0       CE SERVICE STOP CONST       8AC46070
0059 0  2001          DC      /0001+AREA CE ON WORD                   8AC46080
005A 0  7035    CEOFF DC      TTTT                                    8AC46090
005B 0  2000          DC      /0000+AREA CE OFF WORD                  8AC46100
                ********************************************          8AC46110
                *                                                       8AC46120
                *           EXIT POINTS TO AUX LOADER                   8AC46130
                *           *************************                   8AC46140
                *                                                       8AC46150
                *           TERMINATE EXIT POINT                        8AC46160
005C 00 650u0813 NOTRD LDX  L1 WWWW                                     8AC46170
005E 0  69A5          STX   1 /0%                                       8AC46180
005F 0  08FA          XIO     CEOFF       REMOVE DEVICE FROM CE MODE  8AC46190
                *                                                       8AC46200
                *           NORMAL EXIT POINT                           8AC46210
0060 00 66000000 SAVE2 LDX  L2 0                                        8AC46220
0062 00 67000000 SAVE3 LDX  L3 0                                        8AC46230
                *                                                       8AC46240
0064 0  70A8          MDX     QQQQ                                      8AC46250
                ********************************************          8AC46260
                ********************************************************8AC46270
                ********************************************************8AC46280
                *                                                       8AC46290
                *           THE FOLLOWING CONSTANTS AND IOCC            8AC46300
                *           WORDS HAS BEEN PLACED HERE TO AID           8AC46310
                *           THE CE IN HIS PROGRAMMING EFFORT.           8AC46320
                *                                                       8AC46330
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                *     CAUTION                                           8AC46340
                *       THE INSTRUCTION FOLLOWING A READ OR WRITE       8AC46350
                *       XIO MUST BE A CONTROL XIO. IF A USEFULL         8AC46360
                *       CONTROL XIO IS NOT DESIRED YOU MAY REFER        8AC46370
                *       TO THE LOCATION LABELED  HECK . THIS            8AC46380
                *       WILL GIVE YOU A READ BACK CHECK WITH A          8AC46390
                *       WORD COUNT OF ZERO.                             8AC46400
                *                                                       8AC46410
0065 0  0000    HOME  DC      0           IF THIS LOC IS ZERO THE     8AC46420
                *                         * CARRIAGE IS NOT HOME      8AC46430
0066    0000          BSS   E 0                                       8AC46440
0066 0  0000    CESW  DC      0           CE PROGRAM SW SETTING       8AC46450
0067 0  0000    STATU DC      0           DEVICE STATUS WORD          8AC46460
                *                                                       8AC46470
0068 0  0080    CHECK DC      TABLE       REFERS TO SECTOR COUNT TAB  8AC46480
0069 0  2680          DC      /0680+AREA  IOCC INIT READ CHECK        8AC46490
                *                         FROM SECTOR 0               8AC46500
                *                                                     8AC46510
006A 0  0074    HECK  DC      TAB00       REFERS TO SECTOR COUNT TAB  8AC46520
006B 0  2680          DC      /0680+AREA  IOCC INIT READ CHECK        8AC46530
                *                         FROM SECTOR 0               8AC46540
                *                         REFERRING TO A TABLE WITH   8AC46550
                *                         WORD COUNT OF ZERO          8AC46560
                *                                                     8AC46570
                *                                                     8AC46580
                *                                                     8AC46590
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I      8AC46600
                *           CORRECTIONS FOR THE FOLLOWING 27    *       8AC46610
                *           WORDS MUST BE MADE IN THE CARD      *       8AC46620
                *           NUMBERED 1 OF THIS AUX PROGRAMS     *       8AC46630
                *           7 CARD OBJECT DECK.                 *       8AC46640
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I      8AC46650
                *                                                       8AC46660
                *                                                       8AC46670
006C 0  0080    READ  DC      TABLE       REFERS TO SECTOR COUNT TAB  8AC46680
006D 0  2600          DC      /0600+AREA  IOCC INIT READ              8AC46690
                *                         FROM SECTOR 0               8AC46700
                *                                                     8AC46710
006E 0  0080    WRITE DC      TABLE       REFERS TO SECTOR COUNT TAB  8AC46720
006F 0  2500          DC      /0500+AREA  IOCC INIT WRITE             8AC46730
                *                         FROM SECTOR 0               8AC46740
                *                                                     8AC46750
0070 0  0001    CENTR DC      /0001       1 STEP TOWARDS CENTER       8AC46760
0071 0  2400          DC      /0400+AREA  IOCC CONTROL WORD           8AC46770
                *                                                     8AC46780
0072 0  0001    EDGE  DC      /0001       1 STEP TOWARDS EDGE         8AC46790
0073 0  2404          DC      /0404+AREA  IOCC CONTROL WORD           8AC46800
                *                                                     8AC46810
0074 0  0000    TAB00 DC      0           WD COUNT OF 0  DO NOT ALTE  8AC46820
                ********************************************************8AC46830
                *                                                       8AC46840
                *                                                       8AC46850
                *                                                       8AC46860
                *           THIS IS THE STARTING POINT OF YOUR          8AC46870
                *           PROGRAM.                                    8AC46880
                *                                                       8AC46890
                *                                                       8AC46900
                *                                                       8AC46910
                *                                                       8AC46920
0075 0  70E6    CEGO  MDX     NOTRD       1ST LOC OF YOUR PROGRAM     8AC46930
                *           BRANCH TO LOCATION  SAVE2   WHEN            8AC46940
                *           EXITING FROM YOUR PROGRAM.                  8AC46950
0076 0  70E5          MDX     NOTRD                                     8AC46960
0077 0  70E4          MDX     NOTRD                                     8AC46970
0078 0  70E3          MDX     NOTRD                                     8AC46980
0079 0  70E2          MDX     NOTRD                                     8AC46990
007A 0  70E1          MDX     NOTRD                                     8AC47000
007B 0  70E0          MDX     NOTRD                                     8AC47010
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007C 0 70DF            MDX     NOTRD                          8AC47020
007D 0 70DE            MDX     NOTRD                          8AC47030
007E 0 70DD            MDX     NOTRD                          8AC47040
007F 0 70DC            MDX     NOTRD                          8AC47050
0080 0 70DB            MDX     NOTRD                          8AC47060
0081 0 70DA            MDX     NOTRD                          8AC47070
0082 0 70D9            MDX     NOTRD                          8AC47080
0083 0 70D8            MDX     NOTRD                          8AC47090
0084 0 70D7            MDX     NOTRD                          8AC47100
0085 0 70D6            MDX     NOTRD                          8AC47110
0086 0 70D5            MDX     NOTRD                          8AC47120
                       *                                      8AC47130
                       *                                      8AC47140
                       *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC47150
                       *           CORRECTIONS FOR THE FOLLOWING 27   * 8AC47160
                       *           WORDS MUST BE MADE IN THE CARD     * 8AC47170
                       *           NUMBERED 2 OF THIS AUX PROGRAMS    * 8AC47180
                       *           7 CARD OBJECT DECK.                * 8AC47190
                       *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC47200
                       *                                      8AC47210
                       *                                      8AC47220
0087 0 70D4            MDX     NOTRD                          8AC47230
0088 0 70D3            MDX     NOTRD                          8AC47240
0089 0 70D2            MDX     NOTRD                          8AC47250
008A 0 70D1            MDX     NOTRD                          8AC47260
008B 0 70D0            MDX     NOTRD                          8AC47270
008C 0 70CF            MDX     NOTRD                          8AC47280
008D 0 70CE            MDX     NOTRD                          8AC47290
008E 0 70CD            MDX     NOTRD                          8AC47300
008F 0 70CC            MDX     NOTRD                          8AC47310
0090 0 70CB            MDX     NOTRD                          8AC47320
0091 0 70CA            MDX     NOTRD                          8AC47330
0092 0 70C9            MDX     NOTRD                          8AC47340
0093 0 70C8            MDX     NOTRD                          8AC47350
0094 0 70C7            MDX     NOTRD                          8AC47360
0095 0 70C6            MDX     NOTRD                          8AC47370
0096 0 70C5            MDX     NOTRD                          8AC47380
0097 0 70C4            MDX     NOTRD                          8AC47390
0098 0 70C3            MDX     NOTRD                          8AC47400
0099 0 70C2            MDX     NOTRD                          8AC47410
009A 0 70C1            MDX     NOTRD                          8AC47420
0098 0 70C0            MDX     NOTRD                          8AC47430
009C 0 70BF            MDX     NOTRD                          8AC47440
009D 0 70BE            MDX     NOTRD                          8AC47450
009E 0 70BD            MDX     NOTRD                          8AC47460
009F 0 70BC            MDX     NOTRD                          8AC47470
00A0 0 70BB            MDX     NOTRD                          8AC47480
00A1 0 70BA            MDX     NOTRD                          8AC47490
                       *                                      8AC47500
                       *                                      8AC47510
                       *IBM*IBM*ISM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC47520
                       *           CORRECTIONS FOR THE FOLLOWING 27   * 8AC47530
                       *           WORDS MUST BE MADE IN THE CARD     * 8AC47540
                       *           NUMBERED 3 OF THIS AUX PROGRAMS    * 8AC47550
                       *           7 CARD OBJECT DECK.                * 8AC47560
                       *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC47570
                       *                                      8AC47580
                       *                                      8AC47590
00A2 0 7089            MDX     NOTRD                          8AC47600
00A3 0 7088            MDX     NOTRD                          8AC47610
00A4 0 7087            MDX     NOTRD                          8AC47620
00A5 0 7086            MDX     NOTRD                          8AC47630
00A6 0 7085            MDX     NOTRD                          8AC47640
00A7 0 7084            MDX     NOTRD                          8AC47650
00A8 0 7083            MDX     NOTRD                          8AC47660
00A9 0 7082            MDX     NOTRD                          8AC47670
00AA 0 7081            MDX     NOTRD                          8AC47680
00AB 0 7080            MDX     NOTRD                          8AC47690
```



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00AC 0 70AF            MDX     NOTRD                          8AC47700
00AD 0 70AE            MDX     NOTRD                          8AC47710
00AE 0 70AD            MDX     NOTRD                          8AC47720
00AF 0 70AC            MDX     NOTRD                          8AC47730
                       *                                      8AC47740
                       *           PLACE WORD COUNT FOR THE DESIRED   * 8AC47750
                       *           TABLE LENGTH IN THE FOLLOWING WORD.* 8AC47760
                       *           DO NOT EXCEED THE PRESENT COUNT    * 8AC47770
                       *           OF 80 WORDS FOR THIS LOCATION, AS IT * 8AC47780
                       *           IS AGAINST THE RULES TO READ OR    * 8AC47790
                       *           WRITE BEYOND THE END OF AUX MEMORY.* 8AC47800
00B0 0 0050    TABLE   DC      80          PLACE WORD COUNT HERE  8AC47810
                       *                                      8AC47820
00B1 0 70AA            MDX     NOTRD                          8AC47830
00B2 0 70A9            MDX     NOTRD                          8AC47840
00B3 0 70A8            MDX     NOTRD                          8AC47850
00B4 0 70A7            MDX     NOTRD                          8AC47860
00B5 0 70A6            MDX     NOTRD                          8AC47870
00B6 0 70A5            MDX     NOTRD                          8AC47880
00B7 0 70A4            MDX     NOTRD                          8AC47890
00B8 0 70A3            MDX     NOTRD                          8AC47900
00B9 0 70A2            MDX     NOTRD                          8AC47910
00BA 0 70A1            MDX     NOTRD                          8AC47920
00BB 0 70A0            MDX     NOTRD                          8AC47930
00BC 0 709F            MDX     NOTRD                          8AC47940
                       *                                      8AC47950
                       *                                      8AC47960
                       *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC47970
                       *           CORRECTIONS FOR THE FOLLOWING 27   * 8AC47980
                       *           WORDS MUST BE MADE IN THE CARD     * 8AC47990
                       *           NUMBERED 4 OF THIS AUX PROGRAMS    * 8AC48000
                       *           7 CARD OBJECT DECK.                * 8AC48010
                       *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC48020
                       *                                      8AC48030
                       *                                      8AC48040
00BD 0 709E            MDX     NOTRD                          8AC48050
00BE 0 709D            MDX     NOTRD                          8AC48060
00BF 0 709C            MDX     NOTRD                          8AC48070
00C0 0 7098            MDX     NOTRD                          8AC48080
00C1 0 709A            MDX     NOTRD                          8AC48090
00C2 0 7099            MDX     NOTRD                          8AC48100
00C3 0 7098            MDX     NOTRD                          8AC48110
00C4 0 7097            MDX     NOTRD                          8AC48120
00C5 0 7096            MDX     NOTRD                          8AC48130
00C6 0 7095            MDX     NOTRD                          8AC48140
00C7 0 7094            MDX     NOTRD                          8AC48150
00C8 0 7093            MDX     NOTRD                          8AC48160
00C9 0 7092            MDX     NOTRD                          8AC48170
00CA 0 7091            MDX     NOTRD                          8AC48180
00CB 0 7090            MDX     NOTRD                          8AC48190
00CC 0 708F            MDX     NOTRD                          8AC48200
00CD 0 7030            MDX     /00FE                          8AC48210
00CE 0 702F            MDX     /00FE                          8AC48220
00CF 0 702E            MDX     /00FE                          8AC48230
00D0 0 702D            MDX     /00FE                          8AC48240
00D1 0 702C            MDX     /00FE                          8AC48250
00D2 0 7028            MDX     /00FE                          8AC48260
00D3 0 702A            MDX     /00FE                          8AC48270
00D4 0 7029            MDX     /00FE                          8AC48280
00D5 0 7028            MDX     /00FE                          8AC48290
00D6 0 7027            MDX     /00FE                          8AC48300
00D7 0 7026            MDX     /00FE                          8AC48310
                       *                                      8AC48320
                       *                                      8AC48330
                       *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC48340
                       *           CORRECTIONS FOR THE FOLLOWING 38   * 8AC48350
                       *           WORDS MUST BE MADE IN THE CARD     * 8AC48360
                       *           NUMBERED 5 OF THIS AUX PROGRAMS    * 8AC48370
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1ST 2310

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                    *          7 CARD OBJECT DECK.                  *  8AC48380
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC48390
                    *                                               8AC48400
                    *                                               8AC48410
00D8 0  7025              MDX     /00FE                             8AC48420
00D9 0  7024              MDX     /00FE                             8AC48430
00DA 0  7023              MDX     /00FE                             8AC48440
00DB 0  7022              MDX     /00FE                             8AC48450
00DC 0  7021              MDX     /00FE                             8AC48460
00DD 0  7020              MDX     /00FE                             8AC48470
00DE 0  701F              MDX     /00FE                             8AC48480
00DF 0  701E              MDX     /00FE                             8AC48490
00E0 0  701D              MDX     /00FE                             8AC48500
00E1 0  701C              MDX     /00FE                             8AC48510
00E2 0  701B              MDX     /00FE                             8AC48520
00E3 0  701A              MDX     /00FE                             8AC48530
00E4 0  7019              MDX     /00FE                             8AC48540
00E5 0  7018              MDX     /00FE                             8AC48550
00E6 0  7017              MDX     /00FE                             8AC48560
00E7 0  7016              MDX     /00FE                             8AC48570
00E8 0  7015              MDX     /00FE                             8AC48580
00E9 0  7014              MDX     /00FE                             8AC48590
00EA 0  7013              MDX     /00FE                             8AC48600
00EB 0  7012              MDX     /00FE                             8AC48610
00EC 0  7011              MDX     /00FE                             8AC48620
00ED 0  7010              MDX     /00FE                             8AC48630
00EE 0  700F              MDX     /00FE                             8AC48640
00EF 0  700E              MDX     /00FE                             8AC48650
00F0 0  700D              MDX     /00FE                             8AC48660
00F1 0  700C              MDX     /00FE                             8AC48670
00F2 0  700B              MDX     /00FE                             8AC48680
00F3 0  700A              MDX     /00FE                             8AC48690
00F4 0  7009              MDX     /00FE                             8AC48700
00F5 0  7008              MDX     /00FE                             8AC48710
00F6 0  7007              MDX     /00FE                             8AC48720
00F7 0  7006              MDX     /00FE                             8AC48730
00F8 0  7005              MDX     /00FE                             8AC48740
00F9 0  7004              MDX     /00FE                             8AC48750
00FA 0  7003              MDX     /00FE                             8AC48760
00FB 0  7002              MDX     /00FE                             8AC48770
00FC 0  7001              MDX     /00FE                             8AC48780
00FD 0  7000              MDX     /00FE                             8AC48790
                    ************************************************* 8AC48800
                    *                                               8AC48810
000D                QQQQ  EQU     /D          GO TO LOADER AT /D    8AC48820
70D7                NNNN  EQU     /70D7       FOR CARD LOADER AT /35 8AC48830
0813                WWWW  EQU     /0813       SET IN LOADER AT /04  8AC48840
7035                TTTT  EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO 8AC48850
                    *                         THE BRANCH FROM THE LOADER 8AC48860
                    *                         TO RETUR IN THIS PROGRAM. 8AC48870
                    ************************************************* 8AC48880
00FE    00FD              END     *-1         END CARD NEVER USED   8AC48888
```


AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 1ST 2310

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	2000	0057,0059,005B,0069,006B,006D,006F,0071,0073
CEGO	0075	004F
CENTR	0070	
CEOFF	005A	0038,005F
CEON	0058	003A,0048
CESW	0066	0044
CHECK	0068	
DSW52	0056	0036,003D
EDGE	0072	
GONE	0051	003F
HECK	006A	
HOME	0065	0040
NNNN	70D7	0056
NOTRD	005C	0046,0052,0075,0076,0077,0078,0079,007A,007B,007C,007D,007E,007F,0080,0081,0082,0083,0084,0085,0086,0087,0088,0089,008A,008B,008C,008D,008E,008F,0090,0091,0092,0093,0094,0095,0096,0097,0098,0099,009A,009B,009C,009D,009E,009F,00A0,00A1,00A2,00A3,00A4,00A5,00A6,00A7,00A8,00A9,00AA,00AB,00AC,00AD,00AE,00AF,00B1,00B2,00B3,00B4,00B5,00B6,00B7,00B8,00B9,00BA,00BB,00BC,00BD,00BE,00BF,00C0,00C1,00C2,00C3,00C4,00C5,00C6,00C7,00C8,00C9,00CA,00CB,00CC
QQQQ	000D	0064
READ	006C	
RETUR	003A	00FE
SAVE2	0060	0038,0049
SAVE3	0062	003C
SENBI	0054	0042,0043,0045
STATU	0067	003E
TABLE	00B0	0068,006C,006E
TAB00	0074	006A
TERM	0052	0048
TTTT	7035	005A
WRITE	006E	
WWWW	0813	005C

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                        ABS
028C                    ORG     /36                                     8AC48900
                *                                                       8AC48910
                ********************************************************8AC48920
4000            AREA  EQU     /4000       2ND 2310 DISK                 8AC48930
                *       IF THIS PROG IS TO BE USED FOR A MACH           8AC48940
                * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH          8AC48950
                * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST       8AC48960
                * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A         8AC48970
                * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG          8AC48980
                * GENERATOR WRITE-UP FOR PROCEDURE.                     8AC48990
                ********************************************************8AC49000
                *                                                       8AC49010
                *                                                       8AC49020
                *             2ND 2310  SKELETON PROGRAM                8AC49030
                *             (SEE AUX CE PROG GENERATOR                8AC49040
                *             * WRITE-UP FOR USE PROCEDURE)             8AC49050
                *             ****************************              8AC49060
                * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE           8AC49070
                *                                                       8AC49080
                *                                                       8AC49090
                *                                                       8AC49100
                *                                                       8AC49110
                *                                                       8AC49120
                *             PURPOSE                                   8AC49130
                *                THE PURPOSE OF THIS PROGRAM IS         8AC49140
                *                TO PROVIDE A SKELETON PROGRAM          8AC49150
                *                UPON WHICH THE CE CAN WRITE AN         8AC49160
                *                AUX STORAGE PROGRAM.                   8AC49170
                *                                                       8AC49180
                *                                                       8AC49190
                *             GENERAL INSTRUCTIONS                      8AC49200
                *             CE SWITCH SETTINGS                        8AC49210
                *                00001111  CE SERVICE STOP              8AC49220
                *                11111111  TERMINATE PROGRAM            8AC49230
                *                ALL OTHER COMBINATIONS ARE STORED      8AC49240
                *                * AT THE LOCATION  CESW  FOR           8AC49250
                *                * POSSIBLE USE BY THE CE TO            8AC49260
                *                * CONTROL HIS PROGRAM                  8AC49270
                *                                                       8AC49280
                *                                                       8AC49290
                ************************************************      8AC49300
                *                                                       8AC49310
                *                                                       8AC49320
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC49330
                *             CORRECTIONS FOR THE FOLLOWING 27    *     8AC49340
                *             WORDS MUST BE MADE IN THE CARD      *     8AC49350
                *             NUMBERED X OF THIS AUX PROGRAMS     *     8AC49360
                *             7 CARD OBJECT DECK.                 *     8AC49370
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC49380
                *                                                       8AC49390
                *                                                       8AC49400
                *             AUX PROG ENTRY POINTS                     8AC49410
                *             *********************                     8AC49420
                *                                                       8AC49430
                *             1ST PASS ENTRY                            8AC49440
                *             **************                            8AC49450
                *                                                       8AC49460
0036 0  C01F                    LD      DSW52       RESTORE LOC NICE    8AC49470
0037 0  D0FD                    STO     /35         * IN AUX LOADER     8AC49480
                *                                                       8AC49490
0038 0  C021                    LD      CEOFF       PLACE BRANCH        8AC49500
0039 0  D0CA                    STO     /04         * TO RETUR LABEL    8AC49510
                *                                                       8AC49520
                *             ALL BUT 1ST PASS ENTRY POINT              8AC49530
                *             ****************************            8AC49540
003A 0  0819    RETUR XIO       CEON        SET DEVICE IN CE MODE       8AC49550
003B 0  6A25          STX   2 SAVE2+1     SAVE INDEX REGISTER 2         8AC49560
                                                                        8AC49570
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003C 0  6826          STX   3 SAVE3+1     SAVE INDEX REGISTER 3         8AC49580
003D 0  0818          XIO     DSW52       SENSE DEVICE STATUS           8AC49590
003E 0  D028          STO     STATU       SAVE DEVICE STATUS            8AC49600
003F 0  E011          AND     GONE        REMOVE ALL DEVICE STATUS      8AC49610
                *                         * COND EXCEPT HOME IND.       8AC49620
0040 00 D4000065      STO   L HOME        PLACE HOME INDICATION WD      8AC49630
0042 0  0811          XIO     SENBI       SENSE CE PROG SW TO ACCUM     8AC49640
0043 0  E010          AND     SENBI       BLOCK OUT PROG SEL SW         8AC49650
0044 0  D021          STO     CESW        SAVE CE PROG SW SETTINGS      8AC49660
0045 0  F00E          EGR     SFNBI                                     8AC49670
0046 00 4C18005C      BSC   L NOTRD,+-    BR TERMINATE PROGRAM          8AC49680
0048 0  F00F          EOR     CEON                                      8AC49690
0049 00 4C180060      BSC   L SAVE2,+-    BR SERVICE STOP               8AC49700
004B 00 CC000052      LDD   L TERM                                      8AC49710
004D 00 DC0000FE      STD   L /00FE       SET TERMINATOR BR AT END      8AC49720
                *                         * OF AUX CORE AS A SAFETY     8AC49730
                *                         * PRECAUTION                  8AC49740
                *                                                       8AC49750
004F 00 4C000075      BSC   L CEGO        BR TO DO IT YOURSELF PROG     8AC49760
                *                                                       8AC49770
                *                                                       8AC49780
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC49790
                *             CORRECTIONS FOR THE FOLLOWING 27    *     8AC49800
                *             WORDS MUST BE MADE IN THE CARD      *     8AC49810
                *             NUMBERED 0 OF THIS AUX PROGRAMS     *     8AC49820
                *             7 CARD OBJECT DECK.                 *     8AC49830
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC49840
                *                                                       8AC49850
                *                                                       8AC49860
0051 0  0800    GONE  DC        /0800       CONST TO REMOVE ALL BUT     8AC49870
                *                           * HOME INDICATER STATUS     8AC49880
0052    0000          BSS   E 0                                         8AC49890
0052 00 4C00005C TERM  BSC   L NOTRD        TERMINATOR BRANCH           8AC49900
                ********************************************************8AC49910
                *                                                       8AC49920
                *             CONSTANTS AND/OR IOCC WORDS               8AC49930
0054    0000          BSS   E 0                                         8AC49940
0054 0  00FF    SENBI DC        /00FF       TERMINATOR CONSTANT         8AC49950
0055 0  0760          DC        /0760       SENSE CE SWITCHES           8AC49960
0056 0  70D7    DSW52 DC        NNNN                                    8AC49970
0057 0  4701          DC        /0701+AREA RESET DEVICE STATUS IOCC     8AC49980
0058 0  00F0    CEON  DC        /00F0       CE SERVICE STOP CONST       8AC49990
0059 0  4001          DC        /0001+AREA CE ON WORD                   8AC50000
005A 0  7035    CEOFF DC        TTTT                                    8AC50010
005B 0  4000          DC        /0000+AREA CE OFF WORD .                8AC50020
                ************************************************      8AC50030
                *                                                       8AC50040
                *             EXIT POINTS TO AUX LOADER                 8AC50050
                *             *************************                 8AC50060
                *                                                       8AC50070
                *             TERMINATE EXIT POINT                      8AC50080
005C 00 65000813 NOTRD LDX   L1 WWWW                                    8AC50090
005E 0  69A5          STX     1 /04                                     8AC50100
005F 0  08FA          XIO       CEOFF       REMOVE DEVICE FROM CE MODE  8AC50110
                *                                                       8AC50120
                *             NORMAL EXIT POINT                         8AC50130
0060 00 66000000 SAVE2 LDX   L2 0                                       8AC50140
0062 00 67000000 SAVE3 LDX   L3 0                                       8AC50150
                *                                                       8AC50160
0064 0  70A8          MDX       QQQQ                                    8AC50170
                ************************************************      8AC50180
                ********************************************************8AC50190
                ********************************************************8AC50200
                *                                                       8AC50210
                *             THE FOLLOWING CONSTANTS AND IOCC          8AC50220
                *             WORDS HAS BEEN PLACED HERE TO AID         8AC50230
                *             THE CE IN HIS PROGRAMMING EFFORT.         8AC50240
                *                                                       8AC50250
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                *     CAUTION                                                 8AC50260
                *        THE INSTRUCTION FOLLOWING A READ OR WRITE            8AC50270
                *        XIO MUST BE A CONTROL XIO. IF A USEFULL              8AC50280
                *        CONTROL XIO IS NOT DESIRED YOU MAY REFER             8AC50290
                *        TO THE LOCATION LABELED  HECK . THIS                 8AC50300
                *        WILL GIVE YOU A READ BACK CHECK WITH A               8AC50310
                *        WORD COUNT OF ZERO.                                  8AC50320
                *                                                             8AC50330
0065 0  0000    HOME  DC      0          IF THIS LOC IS ZERO THE              8AC50340
                *                        * CARRIAGE IS NOT HOME               8AC50350
0066    0009          BSS  E  0                                               8AC50360
0066 0  0000    CESW  DC      0          CE PROGRAM SW SETTING                8AC50370
0067 0  0000    STATU DC      0          DEVICE STATUS WORD                   8AC50380
                *                                                             8AC50390
0068 0  0080    CHECK DC      TABLE      REFERS TO SECTOR COUNT TAB           8AC50400
0069 0  4680          DC      /0680+AREA IOCC INIT READ CHECK                 8AC50410
                *                        FROM SECTOR 0                        8AC50420
                *                                                             8AC50430
006A 0  0074    HECK  DC      TAB00      REFERS TO SECTOR COUNT TAB           8AC50440
0068 0  4680          DC      /0680+AREA IOCC INIT READ CHECK                 8AC50450
                *                        FROM SECTOR 0                        8AC50460
                *                        REFERRING TO A TABLE WITH            8AC50470
                *                        WORD COUNT OF ZERO                   8AC50480
                *                                                             8AC50490
                *                                                             8AC50500
                *                                                             8AC50510
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I       8AC50520
                *           CORRECTIONS FOR THE FOLLOWING 27   *              8AC50530
                *           WORDS MUST BE MADE IN THE CARD     *              8AC50540
                *           NUMBERED 1 OF THIS AUX PROGRAMS    *              8AC50550
                *           7 CARD OBJECT DECK.                *              8AC50560
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I           8AC50570
                *                                                             8AC50580
                *                                                             8AC50590
006C 0  0080    READ  DC      TABLE      REFERS TO SECTOR COUNT TAB           8AC50600
006D 0  4600          DC      /0600+AREA IOCC INIT READ                       8AC50610
                *                        FROM SECTOR 0                        8AC50620
                *                                                             8AC50630
006E 0  0080    WRITE DC      TABLE      REFERS TO SECTOR COUNT TAB           8AC50640
006F 0  4500          DC      /0500+AREA IOCC INIT WRITE                      8AC50650
                *                        FROM SECTOR 0                        8AC50660
                *                                                             8AC50670
0070 0  0001    CENTR DC      /0001      1 STEP TOWARDS CENTER                8AC50680
0071 0  4400          DC      /0400+AREA IOCC CONTROL WORD                    8AC50690
                *                                                             8AC50700
0072 0  0001    EDGE  DC      /0001      1 STEP TOWARDS EDGE                  8AC50710
0073 0  4404          DC      /0404+AREA IOCC CONTROL WORD                    8AC50720
                *                                                             8AC50730
0074 0  0000    TABOO DC      0          WD COUNT OF 0  DO NOT ALTE           8AC50740
                **************************************************          8AC50750
                *                                                             8AC50760
                *                                                             8AC50770
                *                        THIS IS THE STARTING POINT OF YOUR   8AC50780
                *                        PROGRAM.                             8AC50790
                *                                                             8AC50800
                *                                                             8AC50810
                *                                                             8AC50820
                *                                                             8AC50830
0075 0  70E6    CEGO  MDX     NOTRD      1ST LOC OF YOUR PROGRAM              8AC50840
                *                        BRANCH TO LOCATION  SAVE2   WHEN     8AC50850
                *                        EXITING FROM YOUR PROGRAM.           8AC50860
0076 0  70E5          MDX     NOTRD                                           8AC50870
0077 0  70E4          MDX     NOTRD                                           8AC50880
0078 0  70E3          MDX     NOTRD                                           8AC50890
0079 0  70E2          MDX     NOTRD                                           8AC50900
007A 0  70E1          MDX     NOTRD                                           8AC50910
007B 0  70E0          MDX     NOTRD                                           8AC50920
                                                                              8AC50930
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007C 0  70DF          MDX     NOTRD                                           8AC50940
007D 0  70DE          MDX     NOTRD                                           8AC50950
007E 0  70DD          MDX     NOTRD                                           8AC50960
007F 0  70DC          MDX     NOTRD                                           8AC50970
0080 0  70DB          MDX     NOTRD                                           8AC50980
0081 0  70DA          MDX     NOTRD                                           8AC50990
0082 0  70D9          MDX     NOTRD                                           8AC51000
0083 0  70D8          MDX     NOTRD                                           8AC51010
0084 0  70D7          MDX     NOTRD                                           8AC51020
0085 0  70D6          MDX     NOTRD                                           8AC51030
0086 0  70D5          MDX     NOTRD                                           8AC51040
                *                                                             8AC51050
                *                                                             8AC51060
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I       8AC51070
                *           CORRECTIONS FOR THE FOLLOWING 27   *              8AC51080
                *           WORDS MUST BE MADE IN THE CARD     *              8AC51090
                *           NUMBERED 2 OF THIS AUX PROGRAMS    *              8AC51100
                *           7 CARD OBJECT DECK.                *              8AC51110
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I           8AC51120
                *                                                             8AC51130
                *                                                             8AC51140
0087 0  70D4          MDX     NOTRD                                           8AC51150
0088 0  70D3          MDX     NOTRD                                           8AC51160
0089 0  70D2          MDX     NOTRD                                           8AC51170
008A 0  70D1          MDX     NOTRD                                           8AC51180
008B 0  70D0          MDX     NOTRD                                           8AC51190
008C 0  70CF          MDX     NOTRD                                           8AC51200
008D 0  70CE          MDX     NOTRD                                           8AC51210
008E 0  70CD          MDX     NOTRD                                           8AC51220
008F 0  70CC          MDX     NOTRD                                           8AC51230
0090 0  70C8          MDX     NOTRD                                           8AC51240
0091 0  70CA          MDX     NOTRD                                           8AC51250
0092 0  70C9          MDX     NOTRD                                           8AC51260
0093 0  70C8          MDX     NOTRD                                           8AC51270
0094 0  70C7          MDX     NOTRD                                           8AC51280
0095 0  70C6          MDX     NOTRD                                           8AC51290
0096 0  70C5          MDX     NOTRD                                           8AC51300
0097 0  70C4          MDX     NOTRD                                           8AC51310
0098 0  70C3          MDX     NOTRD                                           8AC51320
0099 0  70C2          MDX     NOTRD                                           8AC51330
009A 0  70C1          MDX     NOTRD                                           8AC51340
009B 0  70C0          MDX     NOTRD                                           8AC51350
009C 0  708F          MDX     NOTRD                                           8AC51360
009D 0  708E          MDX     NOTRD                                           8AC51370
009E 0  708D          MDX     NOTRD                                           8AC51380
009F 0  708C          MDX     NOTRD                                           8AC51390
00A0 0  708B          MDX     NOTRD                                           8AC51400
00A1 0  708A          MDX     NOTRD                                           8AC51410
                *                                                             8AC51420
                *                                                             8AC51430
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I       8AC51440
                *           CORRECTIONS FOR THE FOLLOWING 27   *              8AC51450
                *           WORDS MUST BE MADE IN THE CARD     *              8AC51460
                *           NUMBERED 3 OF THIS AUX PROGRAMS    *              8AC51470
                *           7 CARD OBJECT DECK.                *              8AC51480
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I           8AC51490
                *                                                             8AC51500
                *                                                             8AC51510
00A2 0  7089          MDX     NOTRD                                           8AC51520
00A3 0  7088          MDX     NOTRD                                           8AC51530
00A4 0  7087          MDX     NOTRD                                           8AC51540
00A5 0  7086          MDX     NOTRD                                           8AC51550
00A6 0  7085          MDX     NOTRD                                           8AC51560
00A7 0  7084          MDX     NOTRD                                           8AC51570
00A8 0  7083          MDX     NOTRD                                           8AC51580
00A9 0  7082          MDX     NOTRD                                           8AC51590
00AA 0  7081          MDX     NOTRD                                           8AC51600
00AB 0  7080          MDX     NOTRD                                           8AC51610
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00AC 0 70AF          MDX    NOTRD                                  8AC51620
00AD 0 70AE          MDX    NOTRD                                  8AC51630
00AE 0 70AD          MDX    NOTRD                                  8AC51640
00AF 0 70AC          MDX    NOTRD                                  8AC51650
                    *                                             8AC51660
                    *           PLACE WORD COUNT FOR THE DESIRED  8AC51670
                    *           TABLE LENGTH IN THE FOLLOWING WORD. 8AC51680
                    *           DO NOT EXCEED THE PRESENT COUNT   8AC51690
                    *           OF 80 WORDS FOR THIS LOCATION, AS IT 8AC51700
                    *           IS AGAINST THE RULES TO READ OR   8AC51710
                    *           WRITE BEYOND THE END OF AUX MEMORY. 8AC51720
0080 0 0050         TABLE DC    80          PLACE WORD COUNT HERE 8AC51730
                    *                                             8AC51740
0081 0 70AA          MDX    NOTRD                                  8AC51750
0082 0 70A9          MDX    NOTRD                                  8AC51760
0083 0 70A8          MDX    NOTRD                                  8AC51770
0084 0 70A7          MDX    NOTRD                                  8AC51780
0085 0 70A6          MDX    NOTRD                                  8AC51790
0086 0 70A5          MDX    NOTRD                                  8AC51800
0087 0 70A4          MDX    NOTRD                                  8AC51810
0088 0 70A3          MDX    NOTRD                                  8AC51820
0089 0 70A2          MDX    NOTRD                                  8AC51830
008A 0 70A1          MDX    NOTRD                                  8AC51840
0088 0 70A0          MDX    NOTRD                                  8AC51850
008C 0 709F          MDX    NOTRD                                  8AC51860
                    *                                             8AC51870
                    *                                             8AC51880
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC51890
                    *           CORRECTIONS FOR THE FOLLOWING 27  * 8AC51900
                    *           WORDS MUST BE MADE IN THE CARD    * 8AC51910
                    *           NUMBERED 4 OF THIS AUX PROGRAMS   * 8AC51920
                    *           7 CARD OBJECT DECK.               * 8AC51930
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC51940
                    *                                             8AC51950
                    *                                             8AC51960
008D 0 709E          MDX    NOTRD                                  8AC51970
008E 0 709D          MDX    NOTRD                                  8AC51980
008F 0 709C          MDX    NOTRD                                  8AC51990
00C0 0 709B          MDX    NOTRD                                  8AC52000
00C1 0 709A          MDX    NOTRD                                  8AC52010
00C2 0 7099          MDX    NOTRD                                  8AC52020
00C3 0 7098          MDX    NOTRD                                  8AC52030
00C4 0 7097          MDX    NOTRD                                  8AC52040
00C5 0 7096          MDX    NOTRD                                  8AC52050
00C6 0 7095          MDX    NOTRD                                  8AC52060
00C7 0 7094          MDX    NOTRD                                  8AC52070
00C8 0 7093          MDX    NOTRD                                  8AC52080
00C9 0 7092          MDX    NOTRD                                  8AC52090
00CA 0 7091          MDX    NOTRD                                  8AC52100
00CB 0 7090          MDX    NOTRD                                  8AC52110
00CC 0 708F          MDX    NOTRD                                  8AC52120
00CD 0 7030          MDX    /00FE                                  8AC52130
00CE 0 702F          MDX    /00FE                                  8AC52140
00CF 0 702E          MDX    /00FE                                  8AC52150
00D0 0 702D          MDX    /00FE                                  8AC52160
00D1 0 702C          MDX    /00FE                                  8AC52170
00D2 0 702B          MDX    /00FE                                  8AC52180
00D3 0 702A          MDX    /00FE                                  8AC52190
00D4 0 7029          MDX    /00FE                                  8AC52200
00D5 0 7028          MDX    /00FE                                  8AC52210
00D6 0 7027          MDX    /00FE                                  8AC52220
00D7 0 7026          MDX    /00FE                                  8AC52230
                    *                                             8AC52240
                    *                                             8AC52250
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC52260
                    *           CORRECTIONS FOR THE FOLLOWING 38  * 8AC52270
                    *           WORDS MUST BE MADE IN THE CARD    * 8AC52280
                    *           NUMBERED 5 OF THIS AUX PROGRAMS   * 8AC52290
```



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                    *           7 CARD OBJECT DECK.               * 8AC52300
                    *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC52310
                    *                                             8AC52320
                    *                                             8AC52330
00D8 0 7025          MDX    /00FE                                  8AC52340
00D9 0 7024          MDX    /00FE                                  8AC52350
00DA 0 7023          MDX    /00FE                                  8AC52360
00DB 0 7022          MDX    /00FE                                  8AC52370
00DC 0 7021          MDX    /00FE                                  8AC52380
00DD 0 7020          MDX    /00FE                                  8AC52390
00DE 0 701F          MDX    /00FE                                  8AC52400
00DF 0 701E          MDX    /00FE                                  8AC52410
00E0 0 701D          MDX    /00FE                                  8AC52420
00E1 0 701C          MDX    /00FE                                  8AC52430
00E2 0 701B          MDX    /00FE                                  8AC52440
00E3 0 701A          MDX    /00FE                                  8AC52450
00E4 0 7019          MDX    /00FE                                  8AC52460
00E5 0 7018          MDX    /00FE                                  8AC52470
00E6 0 7017          MDX    /00FE                                  8AC52480
00E7 0 7016          MDX    /00FE                                  8AC52490
00E8 0 7015          MDX    /00FE                                  8AC52500
00E9 0 7014          MDX    /00FE                                  8AC52510
00EA 0 7013          MDX    /00FE                                  8AC52520
00EB 0 7012          MDX    /00FE                                  8AC52530
00EC 0 7011          MDX    /00FE                                  8AC52540
00ED 0 7010          MDX    /00FE                                  8AC52550
00EE 0 700F          MDX    /00FE                                  8AC52560
00EF 0 700E          MDX    /00FE                                  8AC52570
00F0 0 700D          MDX    /00FE                                  8AC52580
00F1 0 700C          MDX    /00FE                                  8AC52590
00F2 0 700B          MDX    /00FE                                  8AC52600
00F3 0 700A          MDX    /00FE                                  8AC52610
00F4 0 7009          MDX    /00FE                                  8AC52620
00F5 0 7008          MDX    /00FE                                  8AC52630
00F6 0 7007          MDX    /00FE                                  8AC52640
00F7 0 7006          MDX    /00FE                                  8AC52650
00F8 0 7005          MDX    /00FE                                  8AC52660
00F9 0 7004          MDX    /00FE                                  8AC52670
00FA 0 7003          MDX    /00FE                                  8AC52680
00FB 0 7002          MDX    /00FE                                  8AC52690
00FC 0 7001          MDX    /00FE                                  8AC52700
00FD 0 7000          MDX    /00FE                                  8AC52710
                    ***************************************************** 8AC52720
                    *                                             8AC52730
000D                QQQQ   EQU    /D          GO TO LOADER AT /D 8AC52740
7007                NNNN   EQU    /7007       FOR CARD LOADER AT /35 8AC52750
0813                WWWW   EQU    /0813       SET IN LOADER AT /04 8AC52760
7035                TTTT   EQU    /7000+RETUR-/4-1    THIS IS EQUAL TO 8AC52770
                    *                         THE BRANCH FROM THE LOADER 8AC52780
                    *                         TO RETUR IN THIS PROGRAM. 8AC52790
                    ***************************************************** 8AC52800
00FE    00FD        END    *-1         END CARD NEVER USED        8AC52810
```

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 2ND 2310

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	4000	0057,0059,005B,0069,006B,006D,006F,0071,0073
CEGO	0075	004F
CENTR	0070	
CEOFF	005A	0038,005F
CEON	0058	003A,0048
CESW	0066	0044
CHECK	0068	
DSW52	0056	0036,003D
EDGE	0072	
GONE	0051	003F
HECK	006A	
HOME	0065	0040
NNNN	70D7	0056
NOTRD	005C	0046,0052,0075,0076,0077,0078,0079,007A,007B,007C, 007D,007E,007F,0080,0081,0082,0083,0084,0085,0086, 0087,0088,0089,008A,008B,008C,008D,008E,008F,0090, 0091,0092,0093,0094,0095,0096,0097,0098,0099,009A, 0098,009C,009D,009E,009F,00A0,00A1,00A2,00A3,00A4, 00A5,00A6,00A7,00A8,00A9,00AA,00AB,00AC,00AD,00AE, 00AF,00B1,00B2,00B3,00B4,00B5,00B6,00B7,00B8,00B9, 00BA,00BB,00BC,00BD,00BE,00BF,00C0,00C1,00C2,00C3, 00C4,00C5,00C6,00C7,00C8,00C9,00CA,00CB,00CC
QQQQ	000D	0064
READ	006C	
RETUR	003A	00FE
SAVE2	0060	003B,0049
SAVE3	0062	003C
SENBI	0054	0042,0043,0045
STATU	0067	003E
TABLE	0080	0068,006C,006E
TAB00	0074	006A
TERM	0052	004B
TTTT	7035	005A
WRITE	006E	
WWWW	0813	005C

AUX PROGRAM GENERATOR UTILITY PROGRAM
AUX 3RD 2310

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                        ABS                                              8AC52820
32BC                    ORG     /36                                      8AC52830
                *                                                        8AC52840
                ************************************************** 8AC52850
4800            AREA    EQU     /4800       3RD 2310 DISK                8AC52860
                *         IF THIS PROG IS TO BE USED FOR A MACH          8AC52870
                * WITH A DIFF AREA CODE ALL THE LOCATIONS WHICH          8AC52880
                * REFER TO THE LABEL   AREA   IN SYMBOL TABLE MUST       8AC52890
                * BE CHANGED BY HEX CORRECTION CARDS TO OBTAIN A         8AC52900
                * MODIFIED AUX 8-8 OBJECT DECK. SEE AUX CE PROG          8AC52910
                * GENERATOR WRITE-UP FOR PROCEDURE.                      8AC52920
                ************************************************** 8AC52930
                *                                                        8AC52940
                *                                                        8AC52950
                *            3RD 2310  SKELETON PROGRAM                  8AC52960
                *            (SEE AUX CE PROG GENERATOR                  8AC52970
                *            * WRITE-UP FOR USE PROCEDURE)               8AC52980
                *            ****************************                8AC52990
                * THIS PROG CAN NOT BE LOADED FROM PAPER TAPE            8AC53000
                *                                                        8AC53010
                *                                                        8AC53020
                *                                                        8AC53030
                *                                                        8AC53040
                *            PURPOSE                                     8AC53050
                *               THE PURPOSE OF THIS PROGRAM IS           8AC53060
                *               TO PROVIDE A SKELETON PROGRAM            8AC53070
                *               UPON WHICH THE CE CAN WRITE AN           8AC53080
                *               AUX STORAGE PROGRAM.                     8AC53090
                *                                                        8AC53100
                *                                                        8AC53110
                *            GENERAL INSTRUCTIONS                        8AC53120
                *            CE SWITCH SETTINGS                          8AC53130
                *               00001111  CE SERVICE STOP                8AC53140
                *               11111111  TERMINATE PROGRAM              8AC53150
                *               ALL OTHER COMBINATIONS ARE STORED        8AC53160
                *               * AT THE LOCATION  CESW  FOR             8AC53170
                *               * POSSIBLE USE BY THE CE TO              8AC53180
                *               * CONTROL HIS PROGRAM                    8AC53190
                *                                                        8AC53200
                *                                                        8AC53210
                ********************************************           8AC53220
                *                                                        8AC53230
                *                                                        8AC53240
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC53250
                *            CORRECTIONS FOR THE FOLLOWING 27   *        8AC53260
                *            WORDS MUST BE MADE IN THE CARD     *        8AC53270
                *            NUMBERED X OF THIS AUX PROGRAMS    *        8AC53280
                *            7 CARD OBJECT DECK.                *        8AC53290
                *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC53300
                *                                                        8AC53310
                *                                                        8AC53320
                *                                                        8AC53330
                *            AUX PROG ENTRY POINTS                       8AC53340
                *            *********************                       8AC53350
                *                                                        8AC53360
                *            1ST PASS ENTRY                              8AC53370
                *            ***************                             8AC53380
                *                                                        8AC53390
0036 0  C01F            LD      DSW52       RESTORE LOC NICE             8AC53400
0037 0  D0FD            STO     /35         * IN AUX LOADER              8AC53410
                *                                                        8AC53420
0038 0  C021            LD      CEOFF       PLACE BRANCH                 8AC53430
0039 0  D0CA            STO     /04         * TO RETUR LABEL             8AC53440
                *                                                        8AC53450
                *           ALL BUT 1ST PASS ENTRY POINT                 8AC53460
                *           ****************************                 8AC53470
003A 0  081D    RETUR   XIO     CEON        SET DEVICE IN CE MODE        8AC53480
003B 0  6A25            STX   2 SAVE2+1     SAVE INDEX REGISTER 2        8AC53490
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003C 0  6826          STX   3 SAVE3+1    SAVE INDEX REGISTER 3      8AC53500
003D 0  0818          XIO     DSW52      SENSE DEVICE STATUS        8AC53510
003E 0  D028          STO     STATU      SAVE DEVICE STATUS         8AC53520
003F 0  E011          AND     GONE       REMOVE ALL DEVICE STATUS   8AC53530
                      *                  * COND EXCEPT HOME IND.    8AC53540
0040 00 D4000065      STO   L HOME       PLACE HOME INDICATION WD   8AC53550
0042 0  081I          XIO     SENBI      SENSE CE PROG SW TO ACCUM  8AC53560
0043 0  E010          AND     SENBI      BLOCK OUT PROG SEL SW      8AC53570
0044 0  D021          STO     CESW       SAVE CE PROG SW SETTINGS   8AC53580
0045 0  F00E          EOR     SENBI                                 8AC53590
0046 00 4C18005C      BSC   L NOTRD,+-   BR TERMINATE PROGRAM       8AC53600
0048 0  F00F          EOR     CEON                                  8AC53610
0049 00 4C180060      BSC   L SAVE2,+-    BR SERVICE STOP           8AC53620
004B 00 CC000052      LDD   L TERM                                  8AC53630
004D 00 DC0000FE      STD   L /00FE      SET TERMINATOR BR AT END   8AC53640
                      *                  * OF AUX CORE AS A SAFETY  8AC53650
                      *                  * PRECAUTION               8AC53660
                      *                                             8AC53670
004F 00 4CC00075      BSC   L CEGO       BR TO DO IT YOURSELF PROG  8AC53680
                      *                                             8AC53690
                      *                                             8AC53700
                      *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC53710
                      *            CORRECTIONS FOR THE FOLLOWING 27   * 8AC53720
                      *            WORDS MUST BE MADE IN THE CARD     * 8AC53730
                      *            NUMBERED 0 OF THIS AUX PROGRAMS    * 8AC53740
                      *            7 CARD OBJECT DECK.                * 8AC53750
                      *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC53760
                      *                                             8AC53770
                      *                                             8AC53780
0051 0  0800          GONE  DC      /0800      CONST TO REMOVE ALL BUT 8AC53790
                      *                        * HOME INDICATER STATUS 8AC53800
0052    0000                BSS   E 0                                8AC53810
0052 00 4C00005C      TERM  BSC   L NOTRD      TERMINATOR BRANCH      8AC53820
                      ********************************************** 8AC53830
                      *                                             8AC53840
                      *            CONSTANTS AND/OR IOCC WORDS      8AC53850
0054    0000                BSS   E 0                                8AC53860
0054 0  00FF          SENBI DC      /00FF      TERMINATOR CONSTANT    8AC53870
0055 0  0760                DC      /0760      SENSE CE SWITCHES      8AC53880
0056 0  70D7          DSW52 DC      NNNN                              8AC53890
0057 0  4F01                DC      /0701+AREA RESET DEVICE STATUS IOCC 8AC53900
0058 0  00F0          CEON  DC      /00F0      CE SERVICE STOP CONST  8AC53910
0059 0  4801                DC      /3001+AREA CE ON WORD             8AC53920
005A 0  7035          CEOFF DC      TTTT                              8AC53930
005B 0  4800                DC      /0000+AREA CE OFF WORD            8AC53940
                      ********************************************** 8AC53950
                      *                                             8AC53960
                      *            EXIT POINTS TO AUX LOADER        8AC53970
                      *            *************************        8AC53980
                      *                                             8AC53990
                      *            TERMINATE EXIT POINT             8AC54000
005C 00 65000813      NOTRD LDX   L1 WWWW                           8AC54010
005E 0  69A5                STX   1 /04                             8AC54020
005F 0  08FA                XIO     CEOFF      REMOVE DEVICE FROM CE MODE 8AC54030
                      *                                             8AC54040
                      *            NORMAL EXIT POINT                8AC54050
0060 00 66000000      SAVE2 LDX   L2 0                              8AC54060
0062 00 67000000      SAVE3 LDX   L3 0                              8AC54070
                      *                                             8AC54080
0064 0  70A8                MDX     QQQQ                            8AC54090
                      ********************************************** 8AC54100
                      ********************************************** 8AC54110
                      ********************************************** 8AC54120
                      *                                             8AC54130
                      *            THE FOLLOWING CONSTANTS AND IOCC 8AC54140
                      *            WORDS HAS BEEN PLACED HERE TO AID 8AC54150
                      *            THE CE IN HIS PROGRAMMING EFFORT. 8AC54160
                      *                                             8AC54170
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                      *     CAUTION                                 8AC54180
                      *        THE INSTRUCTION FOLLOWING A READ OR WRITE 8AC54190
                      *        XIO MUST BE A CONTROL XIO. IF A USEFULL 8AC54200
                      *        CONTROL XIO IS NOT DESIRED YOU MAY REFER 8AC54210
                      *        TO THE LOCATION LABELED  HECK . THIS   8AC54220
                      *        WILL GIVE YOU A READ BACK CHECK WITH A 8AC54230
                      *        WORD COUNT OF ZERO.                    8AC54240
                      *                                               8AC54250
0065 0  0000          HOME  DC      0          IF THIS LOC IS ZERO THE 8AC54260
                      *                        * CARRIAGE IS NOT HOME  8AC54270
0066    0000                BSS   E 0                                 8AC54280
0066 0  0000          CESW  DC      0          CE PROGRAM SW SETTING   8AC54290
0067 0  0000          STATU DC      0          DEVICE STATUS WORD      8AC54300
                      *                                               8AC54310
0068 0  0080          CHECK DC      TABLE      REFERS TO SECTOR COUNT TAB 8AC54320
0069 0  4E80                DC      /0680+AREA IOCC INIT READ CHECK    8AC54330
                      *                        FROM SECTOR 0           8AC54340
                      *                                               8AC54350
006A 0  0074          HECK  DC      TAB00      REFERS TO SECTOR COUNT TAB 8AC54360
006B 0  4E80                DC      /0680+AREA IOCC INIT READ CHECK    8AC54370
                      *                        FROM SECTOR 0           8AC54380
                      *                        REFERRING TO A TABLE WITH 8AC54390
                      *                        WORD COUNT OF ZERO      8AC54400
                      *                                               8AC54410
                      *                                               8AC54420
                      *                                               8AC54430
                      *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC54440
                      *            CORRECTIONS FOR THE FOLLOWING 27   * 8AC54450
                      *            WORDS MUST BE MADE IN THE CARD     * 8AC54460
                      *            NUMBERED 1 OF THIS AUX PROGRAMS    * 8AC54470
                      *            7 CARD OBJECT DECK.                * 8AC54480
                      *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC54490
                      *                                               8AC54500
                      *                                               8AC54510
006C 0  0080          READ  DC      TABLE      REFERS TO SECTOR COUNT TAB 8AC54520
006D 0  4E00                DC      /0600+AREA IOCC INIT READ          8AC54530
                      *                        FROM SECTOR 0           8AC54540
                      *                                               8AC54550
006E 0  0080          WRITE DC      TABLE      REFERS TO SECTOR COUNT TAB 8AC54560
006F 0  4D00                DC      /0500+AREA IOCC INIT WRITE         8AC54570
                      *                        FROM SECTOR 0           8AC54580
                      *                                               8AC54590
0070 0  0001          CENTR DC      /0001      1 STEP TOWARDS CENTER   8AC54600
0071 0  4C00                DC      /0400+AREA IOCC CONTROL WORD       8AC54610
                      *                                               8AC54620
0072 0  0001          EDGE  DC      /0001      1 STEP TOWARDS EDGE     8AC54630
0073 0  4C04                DC      /0404+AREA IOCC CONTROL WORD       8AC54640
                      *                                               8AC54650
0074 0  0000          TAB00 DC      0          WD COUNT OF 0  DO NOT ALTE 8AC54660
                      ********************************************** 8AC54670
                      *                                               8AC54680
                      *                                               8AC54690
                      *                                               8AC54700
                      *            THIS IS THE STARTING POINT OF YOUR 8AC54710
                      *            PROGRAM.                           8AC54720
                      *                                               8AC54730
                      *                                               8AC54740
                      *                                               8AC54750
                      *                                               8AC54760
0075 0  70E6          CEGO  MDX     NOTRD      1ST LOC OF YOUR PROGRAM 8AC54770
                      *            BRANCH TO LOCATION  SAVE2   WHEN   8AC54780
                      *            EXITING FROM YOUR PROGRAM.         8AC54790
0076 0  70E5                MDX     NOTRD                             8AC54800
0077 0  70E4                MDX     NOTRD                             8AC54810
0078 0  70E3                MDX     NOTRD                             8AC54820
0079 0  70E2                MDX     NOTRD                             8AC54830
007A 0  70E1                MDX     NOTRD                             8AC54840
007B 0  70E0                MDX     NOTRD                             8AC54850
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007C 0 70DF          MDX     NOTRD                                  8AC54860
007D 0 70DE          MDX     NOTRD                                  8AC54870
007E 0 70DD          MDX     NOTRD                                  8AC54880
007F 0 70DC          MDX     NOTRD                                  8AC54890
0080 0 70DB          MDX     NOTRD                                  8AC54900
0081 0 70DA          MDX     NOTRD                                  8AC54910
0082 0 70D9          MDX     NOTRD                                  8AC54920
0083 0 70D8          MDX     NOTRD                                  8AC54930
0084 0 70D7          MDX     NOTRD                                  8AC54940
0085 0 70D6          MDX     NOTRD                                  8AC54950
0086 0 70D5          MDX     NOTRD                                  8AC54960
                     *                                              8AC54970
                     *                                              8AC54980
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC54990
                     *            CORRECTIONS FOR THE FOLLOWING 27  * 8AC55000
                     *            WORDS MUST BE MADE IN THE CARD    * 8AC55010
                     *            NUMBERED 2 OF THIS AUX PROGRAMS   * 8AC55020
                     *            7 CARD OBJECT DECK.               * 8AC55030
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC55040
                     *                                              8AC55050
                     *                                              8AC55060
0087 0 70D4          MDX     NOTRD                                  8AC55070
0088 0 70D3          MDX     NOTRD                                  8AC55080
0089 0 70D2          MDX     NOTRD                                  8AC55090
008A 0 70D1          MDX     NOTRD                                  8AC55100
008B 0 70D0          MDX     NOTRD                                  8AC55110
008C 0 70CF          MDX     NOTRD                                  8AC55120
008D 0 70CE          MDX     NOTRD                                  8AC55130
008E 0 70CD          MDX     NOTRD                                  8AC55140
008F 0 70CC          MDX     NOTRD                                  8AC55150
0090 0 70CB          MDX     NOTRD                                  8AC55160
0091 0 70CA          MDX     NOTRD                                  8AC55170
0092 0 70C9          MDX     NOTRD                                  8AC55180
0093 0 70C8          MDX     NOTRD                                  8AC55190
0094 0 70C7          MDX     NOTRD                                  8AC55200
0095 0 70C6          MDX     NOTRD                                  8AC55210
0096 0 70C5          MDX     NOTRD                                  8AC55220
0097 0 70C4          MDX     NOTRD                                  8AC55230
0098 0 70C3          MDX     NOTRD                                  8AC55240
0099 0 70C2          MDX     NOTRD                                  8AC55250
009A 0 70C1          MDX     NOTRD                                  8AC55260
0098 0 70C0          MDX     NOTRD                                  8AC55270
009C 0 70BF          MDX     NOTRD                                  8AC55280
009D 0 70BE          MDX     NOTRD                                  8AC55290
009E 0 70BD          MDX     NOTRD                                  8AC55300
009F 0 70BC          MDX     NOTRD                                  8AC55310
00A0 0 70BB          MDX     NOTRD                                  8AC55320
00A1 0 70BA          MDX     NOTRD                                  8AC55330
                     *                                              8AC55340
                     *                                              8AC55350
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC55360
                     *            CORRECTIONS FOR THE FOLLOWING 27  * 8AC55370
                     *            WORDS MUST BE MADE IN THE CARD    * 8AC55380
                     *            NUMBERED 3 OF THIS AUX PROGRAMS   * 8AC55390
                     *            7 CARD OBJECT DECK.               * 8AC55400
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC55410
                     *                                              8AC55420
                     *                                              8AC55430
00A2 0 7089          MDX     NOTRD                                  8AC55440
00A3 0 7088          MDX     NOTRD                                  8AC55450
00A4 0 7087          MDX     NOTRD                                  8AC55460
00A5 0 7086          MDX     NOTRD                                  8AC55470
00A6 0 7085          MDX     NOTRD                                  8AC55480
00A7 0 7084          MDX     NOTRD                                  8AC55490
00A8 0 7083          MDX     NOTRD                                  8AC55500
00A9 0 7082          MDX     NOTRD                                  8AC55510
00AA 0 7081          MDX     NOTRD                                  8AC55520
00AB 0 7080          MDX     NOTRD                                  8AC55530
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00AC 0 70AF          MDX     NOTRD                                  8AC55540
00AD 0 70AE          MDX     NOTRD                                  8AC55550
00AE 0 70AD          MDX     NOTRD                                  8AC55560
00AF 0 70AC          MDX     NOTRD                                  8AC55570
                     *                                              8AC55580
                     *            PLACE WORD COUNT FOR THE DESIRED  8AC55590
                     *            TABLE LENGTH IN THE FOLLOWING WORD. 8AC55600
                     *            DO NOT EXCEED THE PRESENT COUNT   8AC55610
                     *            OF 80 WORDS FOR THIS LOCATION, AS IT 8AC55620
                     *            IS AGAINST THE RULES TO READ OR   8AC55630
                     *            WRITE BEYOND THE END OF AUX MEMORY. 8AC55640
0080 0 0050          TABLE DC    80          PLACE WORD COUNT HERE  8AC55650
                     *                                              8AC55660
00B1 0 70AA          MDX     NOTRD                                  8AC55670
00B2 0 70A9          MDX     NOTRD                                  8AC55680
00B3 0 70A8          MDX     NOTRD                                  8AC55690
00B4 0 70A7          MDX     NOTRD                                  8AC55700
00B5 0 70A6          MDX     NOTRD                                  8AC55710
00B6 0 70A5          MDX     NOTRD                                  8AC55720
00B7 0 70A4          MDX     NOTRD                                  8AC55730
00B8 0 70A3          MDX     NOTRD                                  8AC55740
00B9 0 70A2          MDX     NOTRD                                  8AC55750
00BA 0 70A1          MDX     NOTRD                                  8AC55760
00BB 0 70A0          MDX     NOTRD                                  8AC55770
00BC 0 709F          MDX     NOTRD                                  8AC55780
                     *                                              8AC55790
                     *                                              8AC55800
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC55810
                     *            CORRECTIONS FOR THE FOLLOWING 27  * 8AC55820
                     *            WORDS MUST BE MADE IN THE CARD    * 8AC55830
                     *            NUMBERED 4 OF THIS AUX PROGRAMS   * 8AC55840
                     *            7 CARD OBJECT DECK.               * 8AC55850
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC55860
                     *                                              8AC55870
00BD 0 709E          MDX     NOTRD                                  8AC55880
00BE 0 709D          MDX     NOTRD                                  8AC55890
00BF 0 709C          MDX     NOTRD                                  8AC55900
00C0 0 709B          MDX     NOTRD                                  8AC55910
00C1 0 709A          MDX     NOTRD                                  8AC55920
00C2 0 7099          MDX     NOTRD                                  8AC55930
00C3 0 7098          MDX     NOTRD                                  8AC55940
00C4 0 7097          MDX     NOTRD                                  8AC55950
00C5 0 7096          MDX     NOTRD                                  8AC55960
00C6 0 7095          MDX     NOTRD                                  8AC55970
00C7 0 7094          MDX     NOTRD                                  8AC55980
00C8 0 7093          MDX     NOTRD                                  8AC55990
00C9 0 7092          MDX     NOTRD                                  8AC56000
00CA 0 7091          MDX     NOTRD                                  8AC56010
00CB 0 7090          MDX     NOTRD                                  8AC56020
00CC 0 708F          MDX     NOTRD                                  8AC56030
00CD 0 7030          MDX     /00FE                                  8AC56040
00CE 0 702F          MDX     /00FE                                  8AC56050
00CF 0 702E          MDX     /00FE                                  8AC56060
00D0 0 702D          MDX     /00FE                                  8AC56070
00D1 0 702C          MDX     /00FE                                  8AC56080
00D2 0 7028          MDX     /00FE                                  8AC56090
00D3 0 702A          MDX     /00FE                                  8AC56100
00D4 0 7029          MDX     /00FE                                  8AC56110
00D5 0 7028          MDX     /00FE                                  8AC56120
00D6 0 7027          MDX     /00FE                                  8AC56130
00D7 0 7026          MDX     /00FE                                  8AC56140
                     *                                              8AC56150
                     *                                              8AC56160
                     *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I 8AC56170
                     *            CORRECTIONS FOR THE FOLLOWING 38  * 8AC56180
                     *            WORDS MUST BE MADE IN THE CARD    * 8AC56190
                     *            NUMBERED 5 OF THIS AUX PROGRAMS   * 8AC56200
                     *                                              8AC56210
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                        *              7 CARD OBJECT DECK.              *  8AC56220
                        *IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*IBM*I  8AC56230
                        *                                               8AC56240
                        *                                               8AC56250
00D8 0  7025            MDX     /00FE                                   8AC56260
00D9 0  7024            MDX     /00FE                                   8AC56270
00DA 0  7023            MDX     /00FE                                   8AC56280
00DB 0  7022            MDX     /00FE                                   8AC56290
00DC 0  7021            MDX     /00FE                                   8AC56300
00DD 0  7020            MDX     /00FE                                   8AC56310
00DE 0  701F            MDX     /00FE                                   8AC56320
00DF 0  701E            MDX     /00FE                                   8AC56330
00E0 0  701D            MDX     /00FE                                   8AC56340
00E1 0  701C            MDX     /00FE                                   8AC56350
00E2 0  7018            MDX     /00FE                                   8AC56360
00E3 0  701A            MDX     /00FE                                   8AC56370
00E4 0  7019            MDX     /00FE                                   8AC56380
00E5 0  7018            MDX     /00FE                                   8AC56390
00E6 0  7017            MDX     /00FE                                   8AC56400
00E7 0  7016            MDX     /00FE                                   8AC56410
00E8 0  7015            MDX     /00FE                                   8AC56420
00E9 0  7014            MDX     /00FE                                   8AC56430
00EA 0  7013            MDX     /00FE                                   8AC56440
00EB 0  7012            MDX     /00FE                                   8AC56450
00EC 0  7011            MDX     /00FE                                   8AC56460
00ED 0  7010            MDX     /00FE                                   8AC56470
00EE 0  700F            MDX     /00FE                                   8AC56480
00EF 0  700E            MDX     /00FE                                   8AC56490
00F0 0  700D            MDX     /00FE                                   8AC56500
00F1 0  700C            MDX     /00FE                                   8AC56510
00F2 0  700B            MDX     /00FE                                   8AC56520
00F3 0  700A            MDX     /00FE                                   8AC56530
00F4 0  7009            MDX     /00FE                                   8AC56540
00F5 0  7008            MDX     /00FE                                   8AC56550
00F6 0  7007            MDX     /00FE                                   8AC56560
00F7 0  7006            MDX     /00FE                                   8AC56570
00F8 0  7005            MDX     /00FE                                   8AC56580
00F9 0  7004            MDX     /00FE                                   8AC56590
00FA 0  7003            MDX     /00FE                                   8AC56600
00FB 0  7002            MDX     /00FE                                   8AC56610
00FC 0  7001            MDX     /00FE                                   8AC56620
00FD 0  7000            MDX     /00FE                                   8AC56630
                        ********************************************      8AC56640
                        *                                               8AC56650
000D                    QQQQ  EQU     /D          GO TO LOADER AT /D    8AC56660
7007                    NNNN  EQU     /7007       FOR CARD LOADER AT /35  8AC56670
0813                    WWWW  EQU     /0813       SET IN LOADER AT /04  8AC56680
7035                    TTTT  EQU     /7000+RETUR-/4-1    THIS IS EQUAL TO  8AC56690
                        *                         THE BRANCH FROM THE LOADER  8AC56700
                        *                         TO RETUR IN THIS PROGRAM.  8AC56710
                        ********************************************      8AC56720
00FE    00FD            END     *-1         END CARD NEVER USED         8AC56730
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CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AREA	4800	0057,0059,005B,0069,006B,006D,006F,0071,0073
CEGO	0075	004F
CENTR	0070	
CEOFF	005A	0038,005F
CEON	0058	003A,0048
CESW	0066	0044
CHECK	0068	
DSW52	0056	0036,003D
EDGE	0072	
GONE	0051	003F
HECK	006A	
HOME	0065	0040
NNNN	7007	0056
NOTRD	005C	0046,0052,0075,0076,0077,0078,0079,007A,0078,007C, 007D,007E,007F,0080,0081,0082,0083,0084,0085,0086, 0087,0088,0089,008A,008B,008C,008D,008E,008F,0090, 0091,0092,0093,0094,0095,0096,0097,0098,0099,009A, 009B,009C,009D,009E,009F,00A0,00A1,00A2,00A3,00A4, 00A5,00A6,00A7,00A8,00A9,00AA,00AB,00AC,00AD,00AE, 00AF,00B1,00B2,00B3,00B4,00B5,00B6,00B7,00B8,00B9, 00BA,00BB,00BC,00BD,00BE,00BF,00C0,00C1,00C2,00C3, 00C4,00C5,00C6,00C7,00C8,00C9,00CA,00CB,00CC
QQQQ	000D	0064
READ	006C	
RETUR	003A	00FE
SAVE2	0060	0038,0049
SAVE3	0062	003C
SENSI	0054	0042,0043,0045
STATU	0067	003E
TABLE	0080	0068,006C,006E
TABOO	0074	006A
TERM	0052	0048
TTTT	7035	005A
WRITE	006E	
WWWW	0813	005C